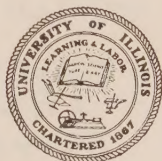


THE
AMERICAN
YEAR BOOK


RECORD OF THE YEAR

1927

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THE AMERICAN YEAR BOOK

A Record of Events and Progress

YEAR 1927

EDITOR

ALBERT BUSHNELL HART, LL.D.

ASSOCIATE EDITOR

WILLIAM M. SCHUYLER

EDITED WITH THE COOPERATION OF
A SUPERVISORY BOARD REPRESENT-
ING NATIONAL LEARNED SOCIETIES



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1928

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OCHS.

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PREFACE

This issue of the AMERICAN YEAR BOOK is the third of the present series, which followed the first series covering the period 1910-1919 inclusive. The volume for 1927 is published in uniform type page, so that it may conform to the earlier issues and thus make a uniform set as published year by year.

To reestablish an annual of this type calls for intellectual and material capital to float the early issues until the series can pay for itself. That the AMERICAN YEAR BOOK has been enabled to do this has been due to the public spirit of Mr. Adolph S. Ochs of *The New York Times*, who advanced funds necessary to insure the production of the manuscript for the 1925 and 1926 volumes, and has assumed all expenses for the manuscript of the 1927 volume as one of the enterprises of *The Times*.

As previously stated the *primum mobile* of the publication is the forty-five national learned societies whose representatives constitute an Advisory Board incorporated under the name "American Year Book Corporation." This organization of societies, acting in counsel of its representative members in annual session and through a Board of Directors at all times, is responsible for the plan of the work, its scope, its layout, and its general point of view. The editors have had the benefit of the advice of individual members of the Board, each member acting in behalf of his own society in the field of his special knowledge and interest. Several of the members of the Board are also contributors to this issue.

The present volume of the AMERICAN YEAR BOOK has been somewhat reduced in size as compared with the previous two volumes, although in assemblage of material and its subdivisions the general organization of the series as already published has been maintained. The twenty-seven Divisions include the fields of public events, business affairs, social conditions, science, history, and the humanities. The separation of Divisions into Sections is made clear by the Table of Contents. As in the volume for 1926, a list of Cognate Societies is added at the end of each Division, the purpose being to enable those who read the volume to apply for information upon difficult points, which may not have been touched upon in the volume, by writing to the officials of the societies most intimately acquainted with a particular subject.

There are one hundred and eighty-five contributors to the present volume. Many of this number have previously contributed, and have therefore become thoroughly familiar with the purposes and aims of the Advisory Board and the Editors. Every effort has been made to find suitable writers for each section of the contents.

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PREFACE

It may again be stated that the AMERICAN YEAR BOOK is not intended to be an almanac of concentrated information and statistics, but rather a general survey of the advance of the nation for the year. There is a vast amount of information in its fact-dealing Sections, some of it in statistical form; the main purpose, however, is to record and to make clear the progress of the year under review,—the advancement in science, the perfecting of methods, the developing of governing policies in nation, states, and local units. It is, in short, designed as a conspectus of the national developments in a given sphere.

The AMERICAN YEAR BOOK is addressed, first, to the intelligent reader who is interested in what goes on in the world, and second, to the specialist who wishes to step outside of his detailed sphere of interest. The book should be a convenient aid to both the ordinary reader and to experts who desire to know in brief what is going on in their own fields and in other fields. It should likewise serve as a handbook for all busy men,—editors, writers, professional men, teachers, scientific workers, artists, engineers, educators, economists and business men, who frequently wish to refresh or verify points of information that may arise in their minds.

To the users of libraries, to editors of the periodical and daily press, to publishers, to intelligence departments of business firms and corporations, to academic and business schools and colleges, to directors of public institutions, the AMERICAN YEAR BOOK should be very useful if not indispensable. The name of the contributor is placed at the head of each Section, and in the alphabetical list of contributors will be found each writer's qualifications for dealing with his subject.

Needless to say, the editors of the AMERICAN YEAR BOOK will be glad at all times to receive suggestions as to form, and matter and methods of treatment. The AMERICAN YEAR BOOK is not crystallized, and it hopes to avail itself of its readers' suggestions for many years.

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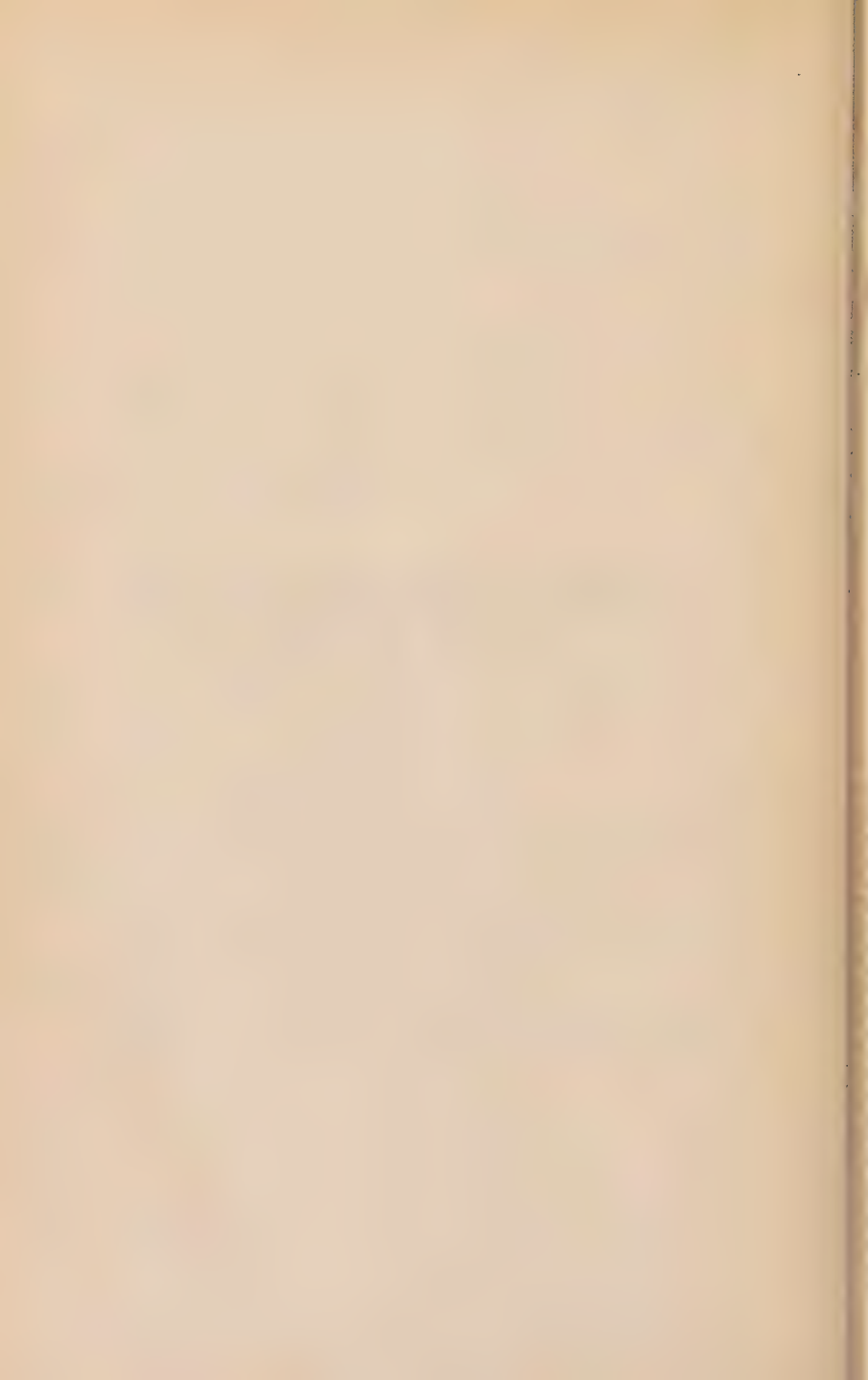
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**THE AMERICAN
YEAR BOOK**



THE AMERICAN YEAR BOOK

A RECORD OF EVENTS AND PROGRESS

PART ONE
HISTORICAL

DIVISION I
AMERICAN POLITICAL HISTORY

CONGRESS AND LEGISLATIVE INVESTIGATIONS

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FILIBUSTER (MARCH, 1927)

When the second session of the Sixty-ninth Congress reconvened on January 3, 1927, following the customary holiday recess, there was little indication that the remaining eight weeks of legislative activity would be sufficient to settle the important matters pending before House and Senate. Especially in the Senate, where the majority leader had not been able to keep the steering committee functioning normally, it was impossible to avoid that confusion which frequently marks the conclusion of short sessions. Three attempts, between the twenty-fourth and the twenty-eighth of February, to invoke the closure rule failed, and the closing hours in the Senate were enlivened by a colorful filibuster which Senator Reed of Pennsylvania organized against the efforts of Senator Reed of Missouri to secure a new lease of life for the select com-

mittee investigating campaign expenses. As a result of the impasse Congress adjourned with several important bills, among them the second deficiency appropriation, in their final stages awaiting action.

RESULT OF ELECTIONS

Before the holiday recess word had been received in Washington that Governor Small had appointed Senator-elect Frank L. Smith to fill the vacancy caused by the death of Senator William B. McKinley of Illinois. In spite of timely admonitions from his friends in the Senate, and abundant evidence of hostility in that body to his appointment, Colonel Smith accepted. He presented himself to receive the oath of office on January 19. Senator Deneen of Illinois urged that he be seated at once and his credentials be referred for examination to the regular Committee on Privileges and Elections.

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To this procedure Senator Reed of Missouri vigorously objected. Admitting that Colonel Smith's credentials were in proper form, he pointed out that the Senate possessed a lengthy report showing "such fraudulent conduct by the applicant as to prove his personal unfitness." Besides, the Senator from Missouri felt that it would be a "ridiculous performance" to administer the oath of office and then hold an investigation to determine whether the oath should have been administered. On January 20 the Senate refused to seat Colonel Smith and sent the papers in the case to the Committee on Privileges and Elections. The vote was 48 to 33, 15 Republicans, 32 Democrats and 1 Farmer-Laborite favoring the action, with 29 Republicans and 4 Democrats opposed.

COMMITTEE HEARINGS

Committee hearings began immediately with former Solicitor-General James M. Beck appearing for Colonel Smith. The point at issue was whether the Senate's control over the election and qualifications of its own members could prevent a state from being represented by any two senators it saw fit to choose. Because of the serious illness of Colonel Smith, the investigation was soon brought to a standstill. In the meantime the Committee on Privileges and Elections had inquired into the charge that Senator Gould of Maine had been instrumental in 1912 in offering a bribe to a Canadian official in furtherance of a client's business interests. The committee report, which the Senate accepted on March 4, stated that the alleged transaction fourteen years earlier had nothing to do with Mr. Gould's election to the United States Senate.

LEGISLATIVE OUTLOOK

Legislative Accomplishment.—In spite of the shortness of the session—only sixty-seven legislative days—the production of laws was high. The final statistics listed 285 public laws, 210 private bills, 25 public and 7 private resolutions enacted between December 6, 1926, and March 4, 1927. Of these not more than a dozen were

of sufficient importance to arouse general interest. Two measures which were in a sense "hangovers" from the previous session were the subject of considerable newspaper comment during the Congressional debates. These were the modified form of the McNary-Haugen bill for farm relief and the McFadden bill dealing with branch banking by national banks. In the Senate where the danger of deadlock was greater than in the House, the friends of the two measures apparently acted in harmony in securing prompt action, though they did not join forces in the final vote.

FARM RELIEF BILL

The McNary-Haugen bill, which passed the Senate on February 11 by 47 to 39 was accepted by the House on February 17 by 214 to 178. The vote cut squarely across. On February 25 President Coolidge returned the bill with his disapproval embodied in a lengthy message which condemned the act in principle as well as in details. The bill was clearly designed, said the President, to facilitate governmental price-fixing, "an economic fallacy from which this country has every right to be spared." The famous "equalization fee" was called "a tax for the special benefit of particular groups." Furthermore, in Mr. Coolidge's opinion the bill would tend to increase production rather than to restrain and regulate it. Serious objection was also raised to the lack of limitations upon the Federal board which was to administer price-fixing, and to the elaborate and expensive machinery to carry out the provisions of the measure. Accompanying the veto-message was an extensive opinion of Attorney General Sargent arguing the bill was unconstitutional because it infringed upon the appointing power of the President by compelling him to select the members of the board from special lists; because it delegated to the Federal board power to fix process without specifying any rules by which prices should be determined; and because the enforced contribution of an equalization fee would contravene the Fifth Amend-

ment in that it would take property without due process of law. No genuine attempt was made by either Senate or House to override the presidential veto.

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Vetoes.—The only other veto of the session which was dignified by an accompanying message concerned a bill authorizing the Shoshone tribe to submit claims under certain circumstances to the Court of Claims. Two measures, one of them a private bill, fell victims to the pocket veto. The public bill which thus failed to become a law provided for a definite schedule of increases in Civil War widow's pensions. In his message at the opening of the session the President had remarked that he saw no reason for a further extension of the pension system at this time.

Appointments.—In its control over the confirmation of appointments, the Senate declined to support the President in his nomination of Cyrus E. Woods to the Interstate Commerce Commission. As the senate committee had reported adversely after a number of hearings at which Mr. Woods appeared, confirmation was denied in executive session on January 25 by a vote of 49 to 28. In the committee hearings it became evident that the hostility of Kentucky, Tennessee and West Virginia to the pending application by Pennsylvanian operators for lower coal rates to lake ports was the most important factor in the opposition. It seemed unwise to the Senate to add a Pennsylvanian to the Interstate Commerce Commission in view of the controversy between the operators.

Foreign Affairs.—Although a well organized effort had been made by various associations to persuade senators of the justice and desirability of the Lausanne treaty with Turkey, the pact failed to receive the necessary two-thirds vote in executive session on January 18. Fifty senators were recorded in favor of ratification and thirty-four against. After the adjournment of Congress the State Department announced on March 14 that an arrangement had been reached whereby the most-favored-nation

agreement would be extended to June, 1928.

FOREIGN RELATIONS

Developments in Mexico and Nicaragua before March 4 gave an opportunity for the display of considerable senatorial eloquence, and revealed how imperfectly the senate plays its part of critic of foreign affairs. The fact that Senator Borah was not always in sympathy with Secretary Kellogg and the State Department enabled the public to catch an occasional glimpse of the confusion in the determination of our foreign policy. On January 25 the senate with no dissent adopted a resolution for the guidance of the diplomatic agents of the United States, recommending that "consistently with the protection of American property rights . . . the controversies with Mexico relating to the alleged confiscation or impairment of the property of American citizens and corporations in Mexico should be settled by arbitration." Neither Mexico nor Nicaragua, however, could turn the legislator's attention from the perennial problem of American adherence to the World Court. A motion to rescind the action of the previous session regarding the Court, offered by Senator Trammell of Florida, was laid on the table by a vote of 59 to 10.

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Senatorial Primaries.—The inquiry into senatorial campaign expenditures conducted by the select committee under the leadership of Senator Reed of Missouri continued to occupy a place in the limelight during the second session of the Sixty-ninth Congress. A preliminary report on the Illinois primaries was laid before the Senate on December 16, followed six days later by a more extensive analysis of the findings in other states. The committee reported that the charges of irregularities connected with campaign contributions in Oregon, Washington and Missouri were not supported by the evidence. It presented without any definite recommendation a lengthy summary of the testimony concerning the senatorial primaries in Pennsylvania. These

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reports did not terminate the labors of the committee, for on January 11, 1927, the Senate directed it to inquire into the election of Representative William S. Vare as a republican senator from Pennsylvania. Chairman Reed announced that it would be impossible to push the investigation before the end of the session, but that ballot boxes used in various Pennsylvania counties would be transferred to Washington for the use of the Committee.

Action During the Recess.—After the adjournment of Congress on March fourth an interesting question arose over the authority of the Reed committee to proceed with its investigation. It was the opinion of many that no Congressional committee, commissioned with an investigative task, could exist beyond the life of the Congress which had created it. The point became more than an academic question when the authorities of Delaware County refused to surrender ballot boxes on the ground that the Committee was no longer in existence. Senator Reed took the case to the United States District Court for the Eastern District of Pennsylvania, which handed down a decision in July to the effect that only the Senate could determine the existence and power of its own committees. An appeal was taken from the decision to the Circuit Court of Appeals, Third Circuit, which affirmed on November 9 the decision of the District Court. Accordingly, the Committee was forced to wait until the opening of the first session of the Seventieth Congress. In response to Senator Reed's demand for a grant of authority, the Senate on December 12 voted 58 to 21 for a resolution confirming the life and power of the committee until it makes a final report on both the Vare and Smith cases.

ORGANIZATION OF THE SEVENTIETH CONGRESS

Senate.—The Seventieth Congress, which President Coolidge had declined to call in special session, met for its first regular session on December 5, 1927. There was little enthusiasm among the Republican leaders as they

surveyed the political line-up. Although the Democrats were not strong enough in the House to offer embarrassing opposition, the situation in the Senate was far different. On paper the membership of the upper house was composed of 48 Republicans, 47 Democrats and one Farmer-Laborite. Even this slight advantage of the Administration party was fictitious, for the seats of two Republican senators were in dispute and at least six who called themselves Republicans were too progressive to follow party leadership in all matters. Control clearly rested in the hands of the "insurgents." There was no desire on the part of the Democrats, however, to effect an alliance with the Republican progressives for the purpose of organizing the Senate. After the introduction of resolutions by Senator Norris of Nebraska against the rights of Senators-elect Vare of Pennsylvania and Smith of Illinois to take the oath of office, an agreement was reached to defer further consideration of the problem of organization until after the reading of the President's message.

The House of Representatives completed its organization on the first day of the session. Nicholas Longworth was elected Speaker and the entire Republican slate was accepted. A slight interruption was occasioned by a challenge to the right of James M. Beck of Philadelphia to be sworn in. It was charged by the Democrats that Beck does not have a legal residence in Pennsylvania, but after a short debate Mr. Beck was seated. The formal organization of the Senate was delayed several days by the issue raised over the seating of Smith and Vare. On December 7 by a vote of 53 to 28 Colonel Smith was denied his seat pending a report from the Reed investigating committee. He was granted the privileges of the floor for the purpose of defending his right to take the oath of office. Two days later similar action was taken in the case of Mr. Vare by a vote of 56 to 30. Like Colonel Smith, the Pennsylvania senator-elect was accorded the right to speak in his own defense on his case coming up for consideration. The Reed committee was re-

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quested to report to the Senate within sixty days if possible.

Status of Insurgents.—In the meantime Senator Curtis of Kansas, the Republican floor leader, had been engaged in the arduous task of wooing the progressives back within the party lines. On the basis of certain promises relative to a speedy vote on legislative matters close to the hearts of the progressives, Senators Blaine and LaFollette of Wisconsin, Frazier and Nye of North Dakota and Shipstead of Minnesota refrained from opposing the regular Republican slate. It was understood that Senator Curtis had given his personal assurance that three matters in particular would be considered before the close of the first session: farm relief, the limitation of the Federal courts in the issuance of injunctions, and investigation of American policy in Latin America.

Though the "insurgents" vigorously denied any formal agreement with the "regulars," their votes enabled the Senate to organize under Republican control by a narrow margin. On December 15 the Democratic candidates for Senate offices were defeated in test votes. Senator Moses was then chosen president pro tempore, Edwin P. Thayer, secretary, and David S. Barry, sergeant-at-arms.

TAX LEGISLATION

Reduction of Taxes.—As a result of the preliminary hearings held by the Committee on Ways and Means of the House of Representatives the new revenue bill was ready for consideration as soon as Congress assembled. Introduced in the House on December 6 by Representative Green of Iowa, the measure provided for a reduction in revenue estimated by the Committee on Ways and Means at \$232,750,000. Although the Federal estate tax remained unchanged, there were other important concessions to the champions of tax reduction. The corporation tax rate was reduced from 13½ per cent to 11½ per cent of net income, with the provision that corporations having a net income of less than \$25,000 should enjoy an exemption of \$3000 instead of \$2000. Reductions of one per cent

in rate were applied to the tax on insurance companies and the transfer tax on capital stock issues, while the automobile sales tax was changed from 3 to 1½ per cent. The exemptions in the case of the tax on theatre tickets were increased, except for boxing exhibitions and prize fights.

Tax Details.—The bill was handled in the House with remarkable speed. Within a week after consideration had begun in Committee of the Whole the amended measure was accepted on December 15 by a vote of 366 to 24. The amendments proposed in Committee and adopted by the House were neither numerous nor, with two exceptions, of great importance. As the result of an amendment offered by Representative Garner of Texas, a graduated tax was imposed on the net incomes of corporations earning \$15,000 or less. Under its provisions the rate for corporations earning less than \$7000 would be 5 per cent; on corporations with incomes between \$7000 and \$12,000, 7 per cent, and 9 per cent on corporations earning between \$12,000 and \$15,000. It was estimated that the effect of this amendment together with the one abolishing the automobile tax would result in a revenue loss of \$100,000,000. A comparison of the House measure in its final form with the proposals of the Treasury Department showed that the total tax reduction would probably be \$289,000,000 instead of the \$225,000,000 recommended by Secretary Mellon. As the bill went to the Senate for consideration it seemed unlikely that the upper house would concur in the large revenue reduction which was the outstanding feature of the House proposals.

FLOOD CONTROL LEGISLATION

Reid Bill.—After months of study based on expert testimony the House Committee on Flood Control prepared a measure designed to prevent a recurrence of such disasters as the Mississippi flood of 1927. Introduced in the House on December 21 by Representative Reid of Illinois, the measure was promptly referred to the Committee for further hearings and discussion. While no definite sum

was to be appropriated by the Federal Government to cope with the situation, the bill recognized the national character of the problem. It provided for the enlargement of the personnel of the Mississippi River Commission, which was directed to proceed immediately to enlarge, strengthen, relocate and reconstruct levees and to construct additional levees and spillways, diversion channels, storage basins and reservoirs. The membership of the Commission under the terms of the bill would be increased from 7 to 13, and would consist of five officers selected from the Engineers Corps of the Army, one from the Coast and Geodetic Survey, and seven members from civil life, all appointed by the President for a term of six years. There were expectations of prompt action by the House of Representatives on the bill after the holiday recess.

Alien Property Bill.—Another measure before the House at the time it recessed was the Alien Property bill, reported unanimously from committee on December 19, which contained elaborate provisions for the creation of a "special deposit account" to supplement funds already in the hands of the Alien Property Custodian available for the return of German and other alien property seized during the World War.

Public Buildings Bill.—By a vote of 275 to 27 the House of Representatives passed on December 19 a bill to amend the Public Buildings Act of May 25, 1926, so as to increase the appropriation for public buildings throughout the United States by \$100,000,000. Of this amount \$15,000,000 is to be used for the completion of buildings authorized in 1913 which were not completed because of the rising war-time costs. The bill carries \$50,000,000 for improvements and buildings in the District of Columbia, increasing the annual expenditures in the District to \$10,000,000 until the program of construction is completed. The House also passed the measure authorizing the purchase by the Secretary of the Treasury of the so-called "Triangle" in the District of Columbia as a site for public buildings.

SENATORIAL INVESTIGATIONS

As a result of difficulties over the seating of Senators-elect Smith and Vare which caused considerable delay in the organization of the Senate, there was little of legislative importance accomplished by the upper house prior to the holiday recess. The Reed Committee, having been authorized by the Norris resolutions to continue its inquiry into campaign expenses, proceeded on December 13 to consider the case of Colonel Frank L. Smith. It was announced that Colonel Smith would be given an opportunity to state his position concerning his eligibility as a senator from Illinois as soon as he could come to Washington and appear before the Committee. An attempt by Senator Walsh of Montana to secure an investigation of the financing of public utilities companies was sidetracked by the Senate. Instead of sending the resolution to the Committee to Audit and Control the Contingent Expenses for the routine authorization by that committee of the necessary expenses of the investigation, the Senate by a vote of 40 to 36 referred the proposed investigation to the Committee on Interstate Commerce. This action on December 19 was designed either to delay or defeat the action proposed in the Walsh resolution.

MEXICAN DOCUMENTS INVESTIGATION

Early in December, 1927, the Hearst newspapers carried a story that the Mexican Government, by direction of President Calles, had paid \$1,200,000 to four United States senators in connection with secret expenditures for pro-Mexican propaganda in the United States. Though the senators were not named in the newspapers, the documents published seemed to be so authentic that the Senate voted unanimously on December 9 to investigate the allegations against certain of its members. A special committee, consisting of Senators Reed of Pennsylvania, Robinson of Arkansas, Jones of Washington, Bruce of Maryland and Johnson of California was appointed and immediately began its sessions. On December 15

SIGNIFICANT FEDERAL LEGISLATION

the names of the four senators to whom the Mexican Government was alleged to have paid \$1,200,000 were disclosed as those of Senators Borah of Idaho, LaFollette of Wisconsin, Heflin of Alabama and Norris of Nebraska. William Randolph Hearst, who produced the originals of the documents which his papers had published, testified that he had received them from a certain Miguel Avila who claimed to have access to the secret files of the Mexican Government. After several days of testimony the various members of the committee gave statements to the

press in which they exonerated their colleagues of all connection with the alleged transaction. Not satisfied with merely clearing their fellow senators of having received bribes from a foreign government, the Committee continued its hearings for the purpose of determining whether the documents were authentic or clever forgeries. There was some feeling in the Senate that this aspect of the inquiry should be referred to the Committee on Foreign Relations, but the special committee announced on December 16 that it would "probe the matter to the bottom."

SIGNIFICANT FEDERAL LEGISLATION

BY JOHN A. KROUT

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Radio Act.—In spite of the President's repeated suggestion that the number of federal commissions should be curtailed, the Radio Act, approved on February 23, adds another administrative board to the already long list. This measure had reached the point of conference in the first session, but a sharp disagreement arose over the relative extent to which regulative powers in connection with radio transmission should be vested in the Secretary of Commerce and in a new commission. The rapidly expanding influence of the Commerce Department, which has been noticeable since 1921, was the subject of discussion in the Senate, but the compromise provisions finally accepted seemed to indicate a victory for the cabinet official. At least the Radio bill was so interpreted in certain quarters. It provides for a bipartisan Federal commission of five members, appointed by the President from five designated zones, who will serve for one year on a salary basis; thereafter all routine functions of control will be vested in the Department of Commerce, with the commissioners acting on a per diem basis to hear cases appealed from the decision of the Secretary.

Workers' Compensation.—Two acts in the field of social welfare legis-

lation were passed after protracted debate. The first renews for a period of two years the Maternity Aid Act of 1921 which was originally drafted to cover a period of five years. The Longshoremen's and Harbor Workers' Compensation Act was the result of a long campaign to secure Congressional ratification of agreements reached by representatives of employers and employees. In presenting the bill to the House, Chairman Graham of the committee on judiciary said: "The representatives of the longshoremen and representatives of employers have both united to ask for the adoption of this measure . . . and they ask you to pass it as it is." The administration of the plan of compensation is placed in the hands of the United States Employees' Compensation Commission, which may function through deputy commissioners or through regular state agencies as it desires.

Immigration.—Although the immigration act of 1924 provided that the national origins clause should become effective in 1927, there was little disposition in Congress to go forward on the basis of the earlier enactment. Students of the immigration problem informed legislative leaders that available information was not sufficient to outline a scheme of immigra-

tion control on the basis of national origins. Accordingly, a joint resolution, approved on March 4, authorized the postponement of the plan contemplated in the legislation of 1924.

Administrative Measures.—Several bills of an administrative character were included in the legislative harvest of the short session. The most interesting of them provides for the creation of a bureau of prohibition, now a unit in the bureau of internal revenue, to be in charge of a commission appointed by the Secretary of the Treasury without regard to civil service laws. Appointments of employees within the bureau, however, must be made in accordance with the provisions of the civil service regulations. Further changes in bureau structure include the creation of a bureau of customs, and the organization of a bureau of chemistry and soils, which will unite the investigative work of the bureau of chemistry with the work of the present bureau of soils. Within the bureau of foreign and domestic commerce, a foreign commerce service with a distinct personnel is recognized by an act approved by the President on March 3.

Naval appropriations.—Of the twelve major appropriation bills passed, the Naval Appropriation Act alone aroused the interest of the country. As reported to the House from the Committee on Appropriations on January 3, it carried appropriations of more than \$314,000,000,

but made no provision for the construction of the two dirigibles and three cruisers authorized by Congress in 1924. An attempt in the House on January 7 to pass the Tilson amendment authorizing an appropriation to start work on three cruisers was defeated. This action was in line with President Coolidge's expressed opposition, in view of the naval disarmament conference, to immediate construction of additional cruisers. In the Senate, however, the demand for naval preparedness was stronger than the inclination to accede to the President's wish in the matter. On February 1 an amended bill, carrying an appropriation of \$1,200,000 to begin work on the cruisers, passed the Senate by a vote of 49 to 27, which broke through party lines. In spite of strenuous opposition in the House to the Senate amendments, a coalition of Republicans and Democrats supported the principle of immediate construction, but reduced the appropriation to \$450,000. On February 24 by a vote of 208 to 172 the bill was sent back to the Senate for approval. That body acquiesced without a division, and on March 2 President Coolidge signed a Naval Appropriations Act which did accord with his original advice to Congress on the subject of cruiser construction. In its final form the bill called for the expenditure of \$316,215,107.

The aggregate of all the regular appropriations, exclusive of the postal service, amounted to more than \$3,455,865,000.

THE PRESIDENT AND HIS POLICIES

BY JAMES HART

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CONCEPTIONS OF THE PRESIDENT

There are two contradictory pictures of President Coolidge. One is of a small-visioned politician whom political accident raised to a lofty position, and who holds to a philosophy of petty thrift and of opposition to needed interference with business. According to this picture his reputa-

tion for wisdom rests upon the same basis as that of the Sphinx. According to the popular image, Mr. Coolidge is a strong, silent, level-headed man who is watchful lest the people's money be wasted, and whose refusal to experiment with untried schemes of regulation makes business confident and promotes prosperity. In this view, the fact that he does little

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insures that he will do nothing wrong.

Perhaps the truth lies between these two estimates. Undoubtedly, the President suits the times. He fits into the conservative temper of the post-war period. In his economy slogan, Mr. Coolidge has emphasized the inevitable—something that had, indeed, been begun by the Wilson and Harding Administrations. In matters of high policy, he seems to rely upon the Big Three of his Cabinet: Secretaries Mellon, Hoover and Kellogg. The year 1927 saw no radical changes in the President's policies. Business men like him because his behavior is predictable.

DOMESTIC POLICIES

Financial.—The Secretary of the Treasury is perhaps the dominant influence in the President's Cabinet. With his financial policies the President is in full agreement. They involve: (1) continued reduction of the debt through annual appropriations and by means of the annual surplus; (2) refunding of bond issues at lower rates of interest; (3) rigid economy, secured through a carefully planned budget and an increase in administrative efficiency; and (4) tax reduction within limits that will prevent a deficit. Mr. Coolidge has also constantly urged that Federal economy and tax reduction will not bring genuine relief to the taxpayer unless a similar policy is followed by state and local units.

On December 7, Mr. Coolidge submitted to Congress his budgetary estimates for the fiscal year ending June 30, 1929. These indicated that the period of the post-war deflation of Federal expenditures has passed.

Agricultural Relief.—The McNary-Haugen farm relief plan was passed in the short session. The farm bloc was thus victorious in Congress, but on February 25, President Coolidge vetoed the bill as unconstitutional and unsound. The President condemned the price-fixing features of the bill, stated that it favored only certain farm products, and held that it would tend to increase rather than decrease surplus production. The veto was highly satisfactory to the

East, but did not convince the West and South. Plans are already afoot to bring the matter up in the seventieth Congress. In his annual message, Mr. Coolidge promised support of "any sound and workable proposal to help the farmer," and suggested a Federal board on marketing, encouragement of the cooperative movement, and provision of a revolving fund for temporary loans to experimental marketing associations. But he repeated his objections to the McNary-Haugen plan.

Mississippi Flood.—In April there began a flood in the Mississippi Valley which Secretary Hoover described as "the greatest peace-time calamity in the history of the country." The President asked the nation to supply the Red Cross with funds for immediate relief, and appointed a cabinet committee to deal with the situation. Secretary Hoover went to the flooded area in person. An effort was made to have Mr. Coolidge call an extraordinary session of Congress before December; but he took the view that Congress could act wisely only after receiving the full report of the engineers. Over \$17,000,000 was raised by the Red Cross, despite criticisms that the President had not aroused the imagination of the country to the pressing need. In his annual message Mr. Coolidge outlined the relief work and plans for closing the dikes before the next flood season. He insisted that the lands adjacent to the dikes should pay part of the cost of future flood control. On December 8, the President submitted the plans of the army engineers to Congress. This called for an expenditure of over \$296,000,000 extending over a ten-year period. The state and local units, he said, should pay 20% of the cost. This was said to come as a shock to the people of the areas concerned; and they were reported to be preparing to fight the proposal in Congress.

The Coal Strike.—A strike in the bituminous coal fields excited little public attention. The President kept hands off; but in November, President Lewis of the United Miners asked him to call a conference. Mr. Coolidge referred the matter to Sec-

retary of Labor Davis, who summoned a conference in December. The miners were fully represented, but some of the operators refused to participate. In his annual message the President recommended an investigation looking to "legislation authorizing a system of fuel administration and the appointment by the President of a board of mediation and conciliation in case of actual or threatened interruption of production."

The Tariff.—In his annual message Mr. Coolidge reasserted his strong belief in the existing tariff system. He expressed opposition to the scheme of lowering rates for the benefit of the farmer, asserting that it would be "disastrous" for him.

FOREIGN POLICIES

Intervention in Nicaragua.—The early months of the year saw the development of three crises that caused criticism among the Liberals. One of these was the Nicaraguan trouble. We had marines in that country from 1912 to 1925—a fact critics of the present Administration are apt to forget. Soon after their withdrawal, Chamorro seized control of the government, but resigned when we refused him recognition. Diaz then became President, and being the only one in sight, was recognized by the United States. But former Vice-President Sacasa returned from banishment to assert his right to succeed President Solonzaro, whom Chamorro had ousted. Mexico recognized Sacasa. In December, 1926, warships were stationed in Nicaraguan ports, and marines were landed at the request of Diaz. "Neutral Zones" were established.

In April, President Coolidge sent Henry L. Stimson to Nicaragua; and he induced the Liberals to end the civil war by promising that America would assure a fair election in 1928. In July, Mr. Coolidge appointed Brigadier-General McCoy to undertake this supervision, and in October the State Department notified Chamorro that, under the Constitution of Nicaragua, he was not eligible for the Presidency again, and would not be recognized if elected. This and the previous refusal to recognize him

were in line with the Hughes policy and the spirit of the Central American Treaty of 1923. Whether this was true of the recognition of Diaz was hotly debated. Senator Borah thought Sacasa entitled to recognition. But it was a condition and not a theory with which the State Department was faced. The Hughes policy simply did not automatically apply to the given situation. Intervention itself seems inevitable in such cases unless we revise radically our conceptions of Nationalism and Capitalism.

The Controversy with Mexico.—The situation in Nicaragua aggravated the friction with Mexico over her petroleum and land laws, in their relation to American rights. These laws had been in discussion between the two governments since 1917. Just when the attitude of the Calles regime was becoming increasingly annoying to the State Department, Mexico recognized Sacasa after we had recognized Diaz. It was also rumored that arms were being supplied to Sacasa from Mexico with the connivance of the Mexican authorities, that Mexico was a center of Soviet propaganda, and that she was seeking to establish a Bolshevik wedge between the United States and the Canal Zone. Did not her oil and land laws prove her Red tendencies?

In January, Secretary Kellogg gave the color of official sanction to some of these rumors; while President Coolidge defended our Nicaraguan policy and sounded a warning towards Mexico in a special message to Congress. Nor did the Administration seem to look with favor upon proposals of arbitration with Mexico, although in January the Senate voted in favor of peaceful settlement by arbitration without a dissenting voice. Gradually, however, tension became relieved, as our diplomacy succeeded in Nicaragua and the Mexican Supreme Court rendered a decision that seemed to favor American claims. Dwight Morrow, of J. P. Morgan and Co., who succeeded Sheffield resigned as our new emissary to Mexico City created a favorable impression.

China.—The third problem grew out of civil war in China and Chi-

THE PRESIDENT AND HIS POLICIES

ness hostility to foreign influence and privileges. Before the first of the year destroyers had been ordered to Hankow. In January, the House of Representatives passed the Porter resolution which requested the President to enter into negotiations with the duly accredited agents of the Government of China, authorized to speak for the people of China, in order to replace the unequal treaties by new treaties resting upon an equitable and reciprocal basis. On January 26, Mr. Kellogg issued a statement of his position. We are prepared, he said, to negotiate regarding the concessions which China desires. But, he pointed out, the real problem is to find anybody who can speak for the whole of China. If Chinese authorities cannot protect American life and property, "it is, of course, the fundamental duty of the United States" to furnish such protection. "It is with the possible necessity for this in view that American naval forces are now in Chinese waters."

The Naval Conference.—The really constructive effort of the President in foreign relations was his calling of a naval conference at Geneva. France and Italy having declined to participate, the President suggested a three-Power Conference between the United States, Great Britain and Japan, the leading naval powers. Both countries accepted. President Coolidge desired the conference to limit cruisers, submarines, and destroyers upon the 5-5-3 ratio. But the British and Americans deadlocked on the subject of cruisers, and early in August the conference ended without reaching an agreement. The President's constructive effort had failed. His next move was then awaited with interest. His annual message declared our need for "a very substantial sea armament," including "a material addition" to the force of cruisers. "We can plan for the future and begin a moderate building program." About the middle of December Mr. Coolidge approved the Wilbur building program. This calls for the expenditure of over \$700,000,000; but that means little, because no time limit was specified.

The Administration and the League.—The President sent a delegation to the Economic Conference which was summoned by the Council of the League of Nations and met in May, and to the Preparatory Commission which is attempting to lay the basis for a proposed Conference on general disarmament. But he refused even to appoint an observer at the meeting of the new Security Commission of the League, the aim of which is to promote "Locarno" pacts in the principal danger zones of Europe.

The Briand Proposal.—In April, Foreign Minister Aristide Briand, of France, proposed, in a message to the American people, the outlawry of war between the sister Republics. Perhaps because it was not formally made, neither the President nor the Secretary of State paid any attention to this important proposal, until President Nicholas Murray Butler had precipitated agitation of the subject outside official circles. In June, Secretary Kellogg authorized Ambassador Herrick to initiate discussions at Paris. In his annual message, Mr. Coolidge said: "We should continue to promote peace by our example, and fortify it by such international covenants against war as we are permitted under our Constitution to make."

THE THIRD TERM QUESTION

Mr. Coolidge's unprecedented popularity and press support made it appear that he could break the tradition against third terms. Naturally Republican office-holders generally desired him to run again. The subject was debated, but the public was apathetic toward the tradition. Mr. Coolidge's silence made him appear to be "receptive." It was claimed that another term would not really be a "third" term. Re-election in 1928 would, however, give him a longer period of service than any other president has had.

On August 2, the exact anniversary of his taking the oath of office four years ago, he broke his silence by giving to the reporters at Rapid City, South Dakota, the cryptic statement: "I do not choose to run for President

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in nineteen twenty-eight." Some few saw in this a mere bid that the Republicans demand him. The insistence of Senator Fess and others that Coolidge be "drafted" led the President to rebuke Mr. Fess, and finally on December 6, to say to the Republican National Committee: "My statement stands. . . . My decision will be

respected." Although opponents of Mr. Coolidge were quick to point out that he did not say that under no circumstances would he accept the nomination, and although neither the August nor the December pronouncement mentioned the third term tradition as such, the press generally accepted his decision as final.

FEDERAL ADMINISTRATIVE COMMISSIONS

By W. J. SHEPARD

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EXECUTIVE AND LEGISLATIVE FRICTION

President's Attitude.—The administrative commissions have not attracted as much public attention the past year as in 1926. There is evidence, however, that the attitude of the President toward these bodies has not been altered. In connection with the proposed legislation for radio control he made it clear that he believed it high time for the Government to stop organizing new boards which are independent of the President, of the Cabinet, and of the other executive branches of the Government. His nominations to positions on these various boards and commissions during the year have, moreover, encountered considerable opposition in the Senate, indicating that the condition of strain between the appointing and confirming authorities with respect to these bodies continues.

Rejection of Woods for I. C. C.—Following the strong opposition and long delay last year in connection with the confirmation of the appointments of Thomas F. Woodlock and Richard V. Taylor to the Interstate Commerce Commission, the nomination of Cyrus E. Woods of Pennsylvania to this commission was eventually rejected by the Senate by a vote of 49 to 28, on January 24. One ground for this action seems to have been his close connection with the Pennsylvania coal industry which at the time was vitally concerned in decisions pending before the Commission. It was also alleged that he had been actively connected with the

recent, rather malodorous, Pennsylvania primary campaign. Probably the chief reason was the feeling on the part of many Senators that his appointment represented a surrender of the President to sectional interests harking back to the sectional controversy over appointments to this body in 1926.

Tariff Commission Appointments.—The same attitude of suspicion by the Senate toward the President's appointments is reflected in the Senate's treatment of nominations to the Tariff Commission. At the beginning of the year the appointments of three of the six members of this body had not been confirmed. It was only at the close of the session that confirmation of the appointments of Commissioners Lowell and Brossard was finally accorded. Commissioner Glasie served under his recess appointment from September, 1926, until March 4. There was so much apparent opposition to him in the Senate that his nomination was never submitted by the President. He was succeeded by Lincoln Dixon whose nomination was submitted to the Senate on January 22 and confirmed March 1.

THE SHIPPING BOARD

Criticism.—This board has been subjected to serious criticism from several quarters during the year. With the widespread change from the steam to the Diesel type of engine, the Board has been confronted with the alternative of transforming many of its ships at very high cost or of

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seeing its business go to foreign competitors. The Board's program of converting twenty vessels, in some instances at a cost of \$1,300,000 each, has been characterized by its critics as amounting to a government subsidy of the Diesel engine industry.

President's Reprimand.—President Coolidge, in his annual message to Congress, December 5, administered a severe reprimand to the Board. "The Shipping Board," the President said, "is constantly under pressure, to which it too often yields, to protect private interests rather than serve the public welfare." Just what was meant by this somewhat cryptic statement occasioned widespread discussion, and a congressional investigation seemed likely to ensue.

Hill Case.—On December 12, W. S. Hill, a member of the Board whose previous term had expired on June 8, and who was at the time holding a recess appointment, was removed by the President and his nomination withdrawn from the Senate. Hill, it was discovered, had been guilty of the grave impropriety of accepting a loan of a large sum of money indirectly from Pacific coast shipping interests. He had recently been especially active in securing modifications in the contracts of sale of Pacific steamship lines which were distinctly advantageous to these same interests. The President appointed Albert H. Denton to fill the vacancy thus occasioned, but his nomination had not been confirmed by the Senate by the end of the year. At least one other member of the Board had been active in the modification of the contracts, but there was no evidence in his case of specific influence by the shipping interests affected. The Board went on record through a resolution definitely condemning Hill's conduct and cancelled the existing contract with the shipping company through whom Hill had obtained the loan. But this action was taken a week after they had learned the facts and appeared somewhat belated.

THE FEDERAL RESERVE BOARD

Rediscount Rate Control.—On September 6, the Federal Reserve Board by a direct order established a redis-

count rate of $3\frac{1}{2}$ per cent for the Federal Reserve Bank of Chicago. This was the first occasion in the history of the Board that such a step had been taken, and it aroused violent criticism among the bankers not only in Chicago, but in the West generally. The control of the rediscount rate is the most important, indeed the crucial, power vested in the system. Through this control business can be largely stimulated or depressed and international trade definitely affected. The Federal Reserve Act does not clearly indicate in whose hands this power is placed. Section 14 provides that every Federal Reserve Bank shall have the power "to establish from time to time, subject to review and determination of the Federal Reserve Board, rates of discount." And Section 11 states that "The Federal Reserve Board shall be authorized and empowered . . . to exercise general supervision over said Federal reserve banks."

Previous action by the Board had always been confined to acting upon proposals from the several Reserve banks to change the discount rate. They now assumed the power of themselves directly determining the rate of discount for one of the member banks. This action was undoubtedly taken in the interest of Great Britain, whose gold reserve was being threatened. The western bankers, not particularly interested in the international situation, maintained that the discount rate was a matter to be determined under the law for each region by the regional bank on the basis of the regional requirements, and that the Federal Reserve Board possessed only a power of approval or disapproval. To them the action of the Board assumed the character of arbitrary usurpation of authority. The action of the Board appears to have been the result of a four to three decision.

Crissinger Resignation.—It is significant that almost immediately after the reduction of the Chicago rate Governor Crissinger of the Federal Reserve Board resigned. The President appointed as his successor Roy A. Young, Governor of the

Federal Reserve Bank of Minneapolis, which had taken the lead, along with the Chicago bank, in opposing the Board's policy. The substitution of Young for Crissinger may well mean that the minority opposed to the Board's action in the Chicago case has now become the majority on the Board, and that a repetition of such action is not likely in the future. Important political repercussions of this incident in the presidential campaign of 1928 have been prognosticated, but this seems scarcely likely probable.

INTERSTATE COMMERCE COMMISSION

O'Fallon Recapture Case.—The decision of the Interstate Commerce Commission in the O'Fallon Recapture case, unimportant so far as the specific case is concerned, clearly indicated that the basis of valuation of railroad properties which the Commission had adopted was original cost. The company brought suit to enjoin the order alleging that cost of reproduction should be the basis of valuation. The Federal district court at Kansas City sustained the Commission's position, but it remains to be seen how the Supreme Court will decide. The question is of the greatest importance, involving as it does the foundation of the entire rate structure of all the railroads of the country.

CIVIL SERVICE COMMISSION

Bureau of Prohibition.—The work of the Civil Service Commission has been greatly enlarged by the Act of March 3, creating the Bureau of Prohibition in the Treasury Department and bringing under the provisions of the civil service law all the positions in that bureau with the single exception of that of commissioner. Approximately 19,000 applications were filed for competitive examination. Owing to lack of funds, progress in rating the papers and giving the oral tests has been much delayed. When this work has been completed, however, this branch of the civil service will be taken out of politics and completely placed on a competitive basis.

THE FEDERAL RADIO COMMISSION

Broadcasting Regulation.—By an Act of Congress, effective February 23, provision was made for the creation of a commission to regulate radio communication. Radio presents a unique problem of regulation and control. The product of this industry is distributed without cost to the consumer, precluding an automatic regulation through competition. Technical factors definitely limit the number of broadcasting stations which may operate without interference within a specific area. The ether, moreover, does not recognize state or national boundary lines and international complications may easily arise from an unrestrained broadcasting activity. Unrestrained broadcasting would, furthermore, seriously interfere with, if not prevent, the effective use of wireless telegraphy and would embarrass the work of scientific experimentation. It has, therefore, been generally recognized that this industry is one which requires very effective national, if not international, regulation.

The Secretary of Commerce, acting under legislation passed in 1912, for the regulation of wireless telegraphy, had assumed the function of assigning wave lengths to broadcasting stations and of maintaining some kind of order in the industry. But the Attorney General rendered an opinion, in July, 1926, to the effect that the Secretary of Commerce was without power to control the broadcasting situation or to assign wave lengths. A condition of almost complete chaos ensued.

Legislation providing some form of central control was clearly imperative. There developed, however, two conflicting proposals. The Senate bill, introduced by Senator Dill, provided for a permanent, independent commission in whose hands the entire power of regulation should be placed. The House measure, the White bill, embodying the administration's view, vested the regulative authority in the Secretary of Commerce. A dead-lock ensued which seemed for a time incapable of being broken. The act which finally issued from the joint conference was a com-

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promise. A commission is indeed created but, unlike other administrative commissions, is closely linked with a regular department of government, the Department of Commerce.

Commission Powers.—The Commission, appointed by the President with the advice and consent of the Senate, consists of five members with overlapping terms of six years. During a period of one year from its first meeting practically complete regulatory control is vested in this body. Thereafter the direct regulatory authority is the Secretary of Commerce but the Commission is continued with extensive powers of hearing and disposing of appeals from any decision, determination or regulation of the Secretary of Commerce. The Commission also retains control over the granting, modifying and revoking of licenses, particularly whenever any protest or conflict arises or in case the applicant for a license requests it. The regulatory power of the Commission (shared with the Secretary of Commerce after one year) is very broad. The "public convenience, interest or necessity" is prescribed by the statute as the only guiding principle. The powers include classifying of stations, prescribing the nature of the service to be rendered, assigning bands of frequencies or wave lengths to each class and to each station, determining the location of classes of stations and of individual stations, regulating the kind of apparatus to be used, prescribing regulations to prevent interference, establishing areas and zones to be served by any station, regulating chain broadcasting, requiring the keeping of records, exempting certain stations from the general regulations, and the holding of hearings with all necessary powers for the compelling the attendance of witnesses and the presentation of evidence. Only a single definite restriction is placed upon the regulating authority. It has no right of censorship. The statute, however, lays upon all broadcasting stations the obligation of equality of treatment of opposing political candidates. As one of the commissioners remarked, "It is a rather appalling responsibility."

Regulatory Procedure.—The chaotic condition of broadcasting immediately engaged the Commission's attention. During the period following the lapse of control by the Secretary of Commerce approximately three hundred new stations had been established making a total of about 690. This number is altogether too large for efficient service, but the Commission did not undertake to reduce the number at once. It issued sixty-day licenses to all existing stations which have thus far been renewed for similar short-time periods. Re-allocation of wave lengths was vigorously undertaken with the result that a 10 kilocycle frequency separation has been established between channels, a 50 kilocycle separation established between local stations, and thirty-five channels cleared entirely for other uses. Our government's agreement with Canada whereby six channels are reserved for Canadian use, which had been seriously violated by pirate broadcasters, has been made effective. Reduction of power transmissions in thickly settled communities has been enforced. A re-allocation of hours during which certain stations may go on the air has been made. Thus a reasonable degree of order has been secured in the industry. This was a necessary preliminary to a definitive attack upon the larger problems of control. It is expected that after February 1, 1928, an effort will be made to reduce the number of stations, perhaps by as many as 300. The Commission may, after that date grant long-term licenses and may undertake to clear additional channels. Undoubtedly such action will lead to injunction suits through which the basic statute and the Commission's powers will be finally determined by court decisions.

Criticism.—There have been various criticisms of the Commission's policy. It is alleged that they have devoted almost exclusive attention to the broadcasting situation and have not been sufficiently concerned with other aspects of radio service, such as point-to-point communication. It is claimed that their orders have in some instances been arbitrary. And it is charged that they are permitting

the growth of a monopoly in the industry. Congress is taking a keen interest in the work of the Commission and various bills are in prospect for amending the Act of 1927. A proposal for extending the period during which the Commission has primary and exclusive control for an additional year will probably receive serious consideration.

Organization.—The Commission, as organized at its first meeting on March 15, consisted of Rear Admiral Bullard of Pennsylvania, chairman; Judge Eugene O. Sykes of Mississippi, vice chairman; O. H. Caldwell of New York; Henry A. Bellows of Minnesota; and Col. John F. Dillon of California. The Act provides that the President shall designate one of the commissioners as the first chairman, and that thereafter the chairman shall be elected by the Commission itself. These appointments were confirmed by the Senate with the exception of those of Commissioners Bellows and Caldwell.

The work of the Commission was seriously embarrassed during the latter part of the year by the loss of three members. On October 8 Com-

missioner Dillon died; Commissioner Bellows submitted his resignation, effective November 1; and on November 24 the chairman of the Commission, Rear Admiral Bullard, died. The President had made two appointments to fill these vacancies: Sam Pickard who had been serving as Secretary of the Commission, and Harold A. Lafont. At the close of the year neither these two appointments nor that of O. H. Caldwell, one of the original commissioners, had been confirmed. The Commission thus on January 1, 1928, was short one member; the appointment of only one member, Judge Sykes, had been confirmed; and no permanent chairman had been chosen to succeed Rear Admiral Bullard. Apparently action on the President's nominations awaits an investigation by the committee of the Senate on Interstate Commerce. The Commission has been further seriously handicapped by lack of funds through the failure of Congress at its last session to pass the deficiency appropriation act. None of the commissioners, in consequence, has drawn a salary, and otherwise their work has been hampered.

NATIONAL STATESMEN

BY JAMES HART

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CABINET LEADERS

The dominant figures in the cabinet remain Secretaries Mellon and Hoover, with Secretary Kellogg a close third, because of the importance of foreign relations.

Secretary Mellon.—Hailed by his friends as the greatest Secretary of the Treasury since Hamilton, and criticized by his opponents as the spokesman, in his financial policies, of big business, Secretary Mellon's prestige continues upon the whole unimpaired. Early in the year he was forced to defend his position on the debt settlements with European nations against criticisms proceeding from Columbia and Princeton Universities. In a letter to President Hibben, Mr. Mellon, intimating that the

Princeton statement would only encourage French opposition to ratification, upheld the capacity-to-pay principle. He asserted that cancellation would leave out of account the goods which we bought for cash in France and England during the war, and that allied payments to the United States would be offset by German reparation payments, and claimed that "the debts have not been cancelled, but excessive demands have not been made."

October 31, Secretary Mellon submitted the Administration tax reduction proposals to the Ways and Means Committee, which had met several weeks in advance of the convening of the Seventieth Congress. He insisted that the reduction be limited

to \$225,000,000, since his estimated surplus for 1929 was not over \$274,000,000. Mr. Garner of Texas, ranking Democrat on the committee, called attention to the fact that in recent years Treasury estimates of surpluses had uniformly been low. Thus the surplus for the fiscal year ending June 30, 1927, estimated at \$283,000,000, had actually amounted to \$635,000,000, which is the high-water mark. This difference was explained, the Secretary said, by receipts from non-recurring sources. Mr. Garner expressed his desire for a cut of from \$400,000,000 to \$500,000,000. Nor did the two financial authorities agree as to how the cut should be made. The Mellon plan included: (1) 1½% reduction of the Corporation tax—the chief item; (2) repeal of the estate tax; (3) reduction of rates in the intermediate brackets of the income tax; (4) retention of existing excise levies, including the automobile sales and admission taxes. Of this plan the President said in his annual message: "It has my complete support." Yet the Committee's report called for a \$232,000,000 cut, while on December 15, the House, adopting Garner amendments, provided a cut of \$290,000,000. At the same time it abolished the automobile sales tax, refused to abolish the estate tax, increased the admission tax exemption, and reduced the corporation tax 2% instead of 1½%.

Secretary Hoover.—Although his post of Secretary of Commerce has been heretofore considered relatively unimportant, Herbert Hoover has been a leading adviser of the President, and has done notable work in his department. He has maintained his reputation as a man with a genius for organization and executive leadership. He has ability, decisiveness, and imagination. He is able to attract capable young assistants, whose personal loyalty, amounting to a sort of religious fervor, inspires them to service. In his Department, Mr. Hoover has cooperated with business in many ways, notably in the preparation of trade information and surveys, and in the promotion of voluntary agreements between business

concerns upon the standardization of products. During 1927 he came into especial prominence in connection with his work for the Government in the Mississippi flood relief. He has interested himself in the Colorado river improvement project, and in the plans for securing a deep-water outlet for Western farm products; and he headed the American representatives at the radio conference held in Washington in October and November.

Secretary Kellogg.—The chief post in the cabinet places any man who occupies it in a prominent but difficult position. Secretary Kellogg has been further handicapped by the fact that he is the successor of Charles Evans Hughes, whom the country regards as one of our greatest Secretaries of State, and by the simultaneous development, during the early months of 1927, of several critical international situations. His policies have shown no marked departures from those of his eminent predecessor; yet during the time when crises of serious import seemed to be developing in Nicaraguan, Mexican and Chinese relations, he was criticized and even ridiculed in the Democratic press and the liberal journals. In some quarters there seems to be an increasing moral sensitiveness in matters international. Apparently a difficulty arises from Secretary Kellogg's ineptitude in "selling" his policies. He has lacked Lord Palmerston's genius for carrying the people with him. Of the specific positions which he took, the majority would probably have been taken by any Secretary of State. During the year the commendable practice of promoting "career men" to minor ministerial posts was carried forward by several appointments.

SENATORS

Senator Borah.—By virtue, both of his position as chairman of the foreign relations committee of the Senate and of his courage and independence, Mr. Borah stands out as a leading figure in national politics. He was at odds with the Administration in its policy toward Nicaragua and Mexico; but his committee, when

he proposed a visit to these two countries, rejected the plan. He corresponded directly with President Calles about certain "facts" of the Mexican situation. He told the American Jewish Congress (February 20) that "it ought to be regarded as a crime to defend by force and with American marines a title or claim for property which cannot stand the inspection of an arbitration." Senator Borah, no doubt, appears to Europeans more like a leader of the Opposition than the Republican chairman of a leading Senate committee. Of late he has been insisting that the next Republican Convention squarely face the prohibition issue. He is more or less closely affiliated with the "progressive group" in the Senate, and is nominally a Republican; but in reality he is a decided free lance.

The Senate Progressive Group.—The Senate of the Seventieth Congress is almost evenly divided. Since all the progressives, except Shipstead, the Farmer-Laborite from Minnesota, are nominally Republicans, their group holds the balance of power. Their leader is George W. Norris, of Nebraska, whom the group has suggested as its candidate for the Republican nomination. The Democrats being unwilling to assume legislative responsibility in the first session, the small group of progressives agreed to help the "regular" Republicans organize the Senate evidently on condition that they receive important committee assignments, and an opportunity to secure consideration of some of their pet projects. Whatever the nature of the bargain they have won a remarkable list of committee posts. Norbeck is chairman of the Banking and Currency Committee, and Frazier and Brookhart are members. Norris is chairman of the Judiciary Committee, and McNary of the Committee on Agriculture. Though the membership of this "insurgent" group shifts somewhat according to the particular issue at stake, it must be reckoned with in any account of national statesmen as a unit as well as being remarkable for the ability of some of its members.

PRESIDENTIAL POSSIBILITIES

Republican.—Since 1928 is the beginning of another "four-year cycle," the country has been thinking of national statesmen in terms of the coming presidential nominations. Mr. Coolidge's announcement that he "did not choose to run" left open a gap for a number of Republican aspirants. Late in December the only openly declared Republican candidacies were those of Senator Willis, of Ohio, and Senator Curtis. In October the Senate Progressives announced their support of Senator Norris. Speaker Longworth was also discussed. The four possibilities most seriously considered up to January 1, 1928, were those of Hughes, Hoover, Lowden and Dawes.

The self-elimination of Mr. Hughes from presidential possibilities, when he declared himself too old to serve, tended to strengthen the position of Secretary Hoover. Mr. Hoover is an exceptionally uninspiring public speaker, and does not seem to have a flair for politics. His views on farm relief agree with those of the President. On the other hand, his flood relief work should make him popular in the Mississippi Valley.

Illinois furnishes ex-Governor Lowden, a leading candidate in 1920, and Vice-President Dawes. Both are identified with farm relief programs; the Vice-President is understood to support Mr. Lowden. The banking interests of the East would probably prefer Dawes to either Lowden or Hoover. Despite his unorthodoxy on farm relief, his general attitude seems to them more predictable. It is reported that Lowden and the Vice-President will attempt to form a combination against Secretary Hoover.

Democratic.—Several Democrats figure in the pre-Convention nomination discussions. Senator Reed, of Missouri, formerly anti-Wilson, always anti-League, wet, devastating in cross-examination, effective in debate, is the man who conducted the investigation of the primaries in which Vare and Smith were nominated. Senator Walsh of Montana, a dry Catholic, an excellent lawyer, a good speaker, is the man who led in the Senate investigation of the oil scan-

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dals. Senator Glass, of Virginia, is also considered of presidential timber, though he comes from a state of the Solid South. Governor Ritchie, of Maryland, is extremely popular in his state, and is a wet and an advocate of extreme states' rights. Other possibilities are Meredith, of Iowa, former Secretary of Agriculture under Wilson; Robinson, of Arkansas; Governor Donahey, of Ohio, because he comes from a pivotal state; and ex-Senator Pomerene, also of Ohio, and recognized candidate for the Senate from Ohio. As the year 1927 closes, Governor Smith looms up as the chief Democratic candidate. Former Secretary of the Treasury McAdoo, with whom he deadlocked in the 1924 Convention, announced in September his withdrawal from the

race. This left Smith apparently dominant. His achievements as governor of the richest and most populous state in the Union, his ability to win elections in an important presidential state, and his winning personality have made him a nationally prominent figure. He is a product of the East Side of New York, a Tammany man, a wet, and a Catholic. These are terms of anathema in the Solid South, the stronghold of his party. Some critics point to his lack of experience upon the larger stage of national and international politics, and assert that he would lack the social graces expected of the head of the American state. His friends have not failed to reply to these criticisms; and his personal popularity, at least in the East, is unquestionable.

THE PROHIBITION CONTROVERSY

BY IRVING FISHER

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INTRODUCTORY

The year was marked by a progressive reorganization of Federal enforcement activities, with authority and responsibility lodged in the new Bureau of Prohibition under a single head, and the divorce of the service from politics by placing the entire force of prohibition agents under civil service rules. Smuggling of spirits into the country, sale of high-powered beer, and diversion of industrial and medicinal alcohol into illicit channels were largely checked, while measures were taken for further restriction of alcohol output to commercial requirements during 1928. But public apathy, failure of cooperation in metropolitan centers, corruption of enforcement agents and political interference during the process of transfer to the civil service materially hampered enforcement efforts.

The death rate from alcoholism was shown to have diminished among white women and the young of both sexes and to have risen among men in age groups above 35. Decisions of the Federal Supreme Court con-

tinued to sustain the provisions of the Volstead Act and of cooperative foreign treaties. Meanwhile the temperance and reform organizations and the anti-prohibitionist societies, urged by the voices of wet and dry leaders of the two major parties, prepared for a trial of strength in the national elections of 1928.

PROHIBITION ADMINISTRATION

New Federal Bureau.—The Prohibition Reorganization Act, approved by the President March 3, became effective April 1. On May 20, Dr. J. M. Doran was appointed Commissioner of Prohibition, succeeding Roy A. Haynes, Acting Commissioner, with power to reorganize the field forces under classified civil service rules. By order of April 6, all officers and employees of the Internal Revenue Service engaged in enforcing the Volstead Act were transferred to the new Bureau, together with the prohibition records and property of the Office of Internal Revenue. The policy of supplanting political appointments by means of the civil service, of placing business executives

in charge of the field forces, and of enlisting local cooperation wherever possible was outlined, together with the centering of enforcement on the large sources of illegal liquor supply in smuggling, illicit brewing, and wrongful diversion of industrial and medicinal alcohol. Secretary Mellon announced, July 15, that the suggestions of members of Congress and political leaders must be consulted in appointing dry officials. But the Civil Service Commission declared, November 26: "The Commission will take every precaution to keep politics out of these appointments. Prohibition Commissioner Doran and the members of the Civil Service Commission are of one mind in the belief that political appointments have been one of the chief hindrances to prohibition enforcement."

Appointment of Lowman.—Secretary Mellon announced, May 20, the resignation of Assistant Secretary Andrews and appointment in his stead of Seymour Lowman, formerly Lieutenant Governor of New York. In taking office August 1, Mr. Lowman said: "Our greatest job is to hold down the activities of the radical wets and the radical dries. Temperance and sobriety are commendable virtues. We want a sober America."

Executive Orders and Regulations.—General Andrews had announced, May 22, that the Executive Order empowering the Treasury to designate state and local officers as Federal prohibition agents would be tried out in California by commissioning local officers at nominal salary. Commissioner Doran declared, July 12, that tax penalties would be inflicted under the new regime along with criminal prosecutions; thus double punishment would be meted out to lawbreakers and collections might be trebled to make prohibition "pay its way." On recommendation of Mrs. Mabel Walker Willebrandt, Assistant Attorney General in charge of prohibition enforcement, the new regulations provide that a dealer in whisky, alcohol, or wine shall sign a contract assuming full responsibility for any violation of the law by an employee as long as the liquor legally remains in the custody of the

permittee. This includes a proviso allowing unlimited right of search of premises of a permittee, and the right to examine all records of retail druggists who deal in intoxicating liquors. It was announced, July 20, that application for renewal of permits to all classes of dealers in alcohol must be made each year after December 31, 1928.

Industrial Advisory Council.—Commissioner Doran reported, October 1, that an Industrial Advisory Council representing consumers, manufacturers and others would aid after January 1, 1928, in further limiting the output of industrial alcohol to the commercial requirements of the country. Industrial alcohol production in the fiscal year 1927 amounted to about 95,000,000 gallons, and he believed reduction would be effected by at least 10,000,000 gallons for the fiscal year 1928. As for medicinal liquors, Assistant Secretary Lowman had reported, August 9, that the sharp decline in withdrawals of whisky from bonded warehouses had left a supply that would last six or seven years at the present rate of consumption; hence there was no reason why the Government should go into the business of replenishing these supplies, as originally planned.

Weeding Out the Deficient.—After a month in the service Mr. Lowman reported, September 9, that many incompetent and crooked men had been found, and the "under cover" men had been helpful in weeding them out. "Some days my arm gets tired signing orders of dismissal," he said; but the dependable men "greatly outnumber the crooks." Mr. Lowman testified that the "great mass of Americans do not drink liquor," the drinking being confined to the "so-called upper crust and the down-and-out in the slums; they are dying off fast from poison 'hooch.'"

ENFORCEMENT

Popular Attitude and Other Handicaps.—Dry enforcement during 1927 entered a definite phase, reversing the old political methods and putting selection of personnel under non-political rules of fitness, under a head bearing full responsibility,

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and with the policies of enforcement subject to approval by the President. Partial failure to enforce the Volstead Act was reported in the large cities, due chiefly to lack of local cooperation and corruption of enforcement agents. A. Bruce Bielaski, retired chief of Federal "under cover" men, said in *Collier's Weekly*, August 13: "After nearly two years I learned that a large percentage of our population does not consider traffic in liquor as heinous as a violation of almost any other Federal statute." Mr. Lowman declared, July 28, that, with New York State refusing to cooperate, Federal enforcement of the liquor laws in the metropolitan areas, the Hudson River counties, Long Island and Connecticut was impossible: New York had 300 Federal agents, one-tenth of the whole Federal force, and they were unequal to the task. Chester P. Mills, formerly Federal Administrator at New York, said in *Collier's Weekly*, September 17, that the party spoils system was responsible for demoralizing enforcement; that "three-quarters of the 2,500 drug agents are ward heelers and sycophants, named by the politicians." But after tendering his resignation Major Mills reported, June 30, decided results of enforcement under handicaps in the New York district. He said that, with decent administration, free from political influence, he was convinced that the sources of supply in the United States could be controlled.

Smuggling.—In the annual report of the Department of Justice, December 5, Mrs. Willebrandt says: "Probably it should be observed that during the year Canadian ports lost some of their former attractions as bases for the high-class liquor smugglers. This has been due to the more stringent regulations which have been thrown about in-transit liquor operations by the Canadian Government. The larger and more powerful operators, therefore, have abandoned Canada. On the West Coast they have been trying out the usefulness of the Society Islands and on the East Coast, the more extensive operations have been moved to St. Pierre and Miquelon." During the fiscal year

1927, the Department of Justice reported that 320 American vessels were captured with contraband liquor in substantial quantities, as against 330 in 1926.

Local Enforcement.—On the basis of Police Department records in 602 places throughout the United States, the anti-prohibitionist Moderation League, Inc., of New York, made public December 11, a survey of the arrests for drunkenness for the three years 1924 to 1926, inclusive. Without allowing for increase in population and increased strictness in making arrests by the police, the report argued that arrests had increased up to the pre-prohibition level. This absence of statistical method, continued from former reports, was criticised in my book *Prohibition at Its Worst*. More comprehensive figures of arrests for drunkenness, obtained from the Police Departments by the World League Against Alcoholism in more than 1,000 American cities and towns for the years 1910 to 1927, were published by me on September 5. These allowed for increases in population and increased strictness of arrests, as computed by police heads in percentage comparisons. Allowing for population increase only, the rate of arrests per 10,000 population had decreased from 191 in 1916 to 67 in 1920, the first year of national prohibition. It then rose to 88 in 1921; to 116 in 1922; to 133 in 1923; to 137 in 1924, and reached a maximum of 140 in 1925, and 139 in 1926. A statistical picture of strictness in making arrests was conservatively estimated from the police reports indicating that 55 per cent of the cases of drunkenness before prohibition were arrested, and 70 per cent for the years 1925 and 1926. This added correction results in showing a steady decline in the percentage of drunkenness arrests from a high point of 206 in 1923, to 198 in 1926, as compared with 113 for the lowest record year 1920, and the pre-prohibition high point of 339 in 1917.

Federal Court Convictions.—Commissioner Doran reported, October 10, that the ratio of convictions to cases had increased slightly. During the fiscal year 1927 it was 70.5 per cent,

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as compared with 68 per cent in 1926, and he said:

I regard it as indicative of a trend that is favorable to enforcement. It must be remembered that the failure of the deficiency bill in the last Congress closed a lot of courts to jury trials. I believe the increase would have been greater had it been possible to complete the year on the basis of the first seven or eight months' average.

Because of lack of money to hire juries the number of cases tried diminished, but the Department of Justice reported, October 13, a substantial increase in civil business growing out of enforcement. It added that the records from Federal penitentiaries regarding habits of prisoners show that 31 per cent claimed to be temperate in 1919, while, for the fiscal year 1927, a total of 44 per cent of those admitted claimed to be temperate. Mrs. Willebrandt reported that the aggregate fines, forfeitures and penalties imposed during the year in criminal cases was \$5,646,709, or \$1,847,848 less than in the preceding year. Trials by jury decreased to 3,747, as against 4,090 during 1926, and pleas of guilty fell from 34,233 in 1926 to 28,881 in 1927.

HEALTH AND MORTALITY

Death Rate.—In his report at the Annual Conference of State and Territorial Health Officers and the Public Health Service at Washington, D. C., May 31, Dr. Matthias Nicoll, Jr., Commissioner of Health of New York, said that the increase in the death rate from alcohol in 1925 for the United States registration area, comprising nearly the whole population, was 260 per cent of the 1920 rate. The increased mortality since 1920, he said, is due "in great part to the establishment of a vast national and international machinery for the illicit manufacture, importation and distribution of alcoholic beverages, a large proportion of which are unfit for beverage purposes."

Dr. Louis I. Dublin, Statistician of the Metropolitan Life Insurance Company of New York, reported at a meeting of the American Public Health Association in Cincinnati, October 19, that the average death rate among insured lives of the com-

pany was 16.9 per cent lower during the prohibition years 1921 and 1926, as compared with the rate between 1911 and 1917. The intervening period 1918-1920 was ruled out because an influenza epidemic had distorted the picture. But the death rate of white and colored males and colored females above 35 failed to share in the improvement during prohibition.

During the prohibition period Dr. Dublin found that there "has been a constant rise in the death rate from alcoholism and from the associated condition of cirrhosis of the liver. Both of these diseases were at a minimum in 1920. They are now at a point almost as high as in the decade prior to prohibition." In my study of data obtained from the United States Bureau of the Census, covering deaths from alcoholism, cirrhosis of the liver, and poisoning by wood alcohol and denatured alcohol, from 1921 to 1925, inclusive, it appears that the death rate from poison alcohol, about which there was much newspaper agitation early in 1927, was only 2 per 1,000,000 of population. In 21 States and the District of Columbia, the death rate from alcoholism, as distinguished from poison alcohol, was 74 per cent of what it was in pre-prohibition days during this period of 1921-1925, and cirrhosis of the liver mortality was 62 per cent.

That alcohol is denatured under the regulations of the Federal Government, not to poison it but to "render it unmistakably non-potable," that is, undrinkable, is the report of the Committee on Industrial Alcohol of the American Chemical Society, made at Richmond, Va., April 11. The Committee adds: "If criminals improve the taste and odor" of denatured alcohol "so that it appears potable without removing any possible poisonous character, the guilt is theirs."

VOLSTEAD AND ENFORCEMENT ACTS

Court Decisions.—The course of court interpretation of the National Prohibition Act during 1927, as during preceding years, was generally to confirm its provisions. The United States Supreme Court rendered the following decisions:

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Case of *Ed Tumeys, Plaintiff, v. State of Ohio*, No. 527, decided March 7; that statutes of Ohio, providing for trial by village mayors of one accused of violating the Ohio Prohibition Act, were unconstitutional, depriving accused of due process of law, because of the pecuniary and other interest which such statutes give mayors in the result of the trial.

Case of *George Ford, and others, v. the United States*, decided April 11; that subjects of Great Britain brought within the jurisdiction of the United States for violations of the National Prohibition Act, are liable for punishment under the British Liquor Treaty of May 22, 1924.

United States v. James M. Lee, alias James M. Leach, No. 752, decided May 31; that officers of the Coast Guard are authorized to seize on the high seas beyond the 12-mile limit an American vessel subject to forfeiture for violation of the revenue laws and to board and search such vessel. Failure of the Government to institute thereafter proceedings for forfeiture is not held to render illegal either the seizure or the search.

United States v. Manly S. Sullivan, decided May 16; that earnings from bootleg liquor operations are properly taxable under the Federal Income Tax law.

Reversing the conviction of *R. Gambino and J. Lima of Utica, N. Y.*, in Federal court for the Northern District of New York, decided December 12; that liquor seized by New York State troopers without a search warrant and solely to aid the United States in the enforcement of the Volstead Act was illegally obtained and should not have been admitted as evidence.

A review of decisions of Federal Courts published by Arthur H. Schwartz, Assistant U. S. Attorney, on July 24, shows unanimity of recent opinions to the effect that proprietors of cabarets, road houses and restaurants are guilty of maintaining a nuisance if they permit their patrons to bring liquor to the places and consume it on the premises.

NEW LEGISLATION

While the Reorganization and Civil Service bill was passed and approved by the President March 3, several important measures were pending on adjournment of Congress, and were to be reintroduced in modified form when the new Congress convened in December. These were:

The Goff bill, S. 4207, favorably reported by the Senate Judiciary Committee, May 17, 1926, pending on Senate calendar. Corresponding bill in House, H. R. 12215, recommended for passage by House Judiciary Committee.

The Stalker bill, H. R. 377, to increase penalties for violation of National Prohibition Act, pending before House Judiciary Committee.

Deportation of aliens concerned in violation

of Volstead Act, H. R. 13444, passed by the House June 7, 1926, pending before Senate Immigration Committee.

S. 4101, to permit employment of retired officers of army, navy, and marine corps on the prohibition service. Reported by Senate Judiciary Committee, May 17, 1926. Similar bill pending before House Judiciary Committee.

The Goff bill greatly extends the powers of prohibition officers. It makes the law more stringent in cases of forfeiture, search and seizure; in requiring manufacturers of cereal beverages to give bond and obtain permits, and in extending the rights of visitation at sea beyond the four-leagues limit.

The efforts of the wets at the opening of the 70th Congress in December, were centered on reintroduction of the many bills for modification and repeal of the Volstead Act that were urged during the session of 1926. These include bills for the manufacture and sale of beer and light wines; the proposals to investigate the working of prohibition enforcement, to amend the Constitution with a view to repeal of the Eighteenth Amendment, and for a national referendum on prohibition.

PROPAGANDA

Anti-Prohibition.—On the question of a national prohibition referendum, the Association Opposed to the Prohibition Amendment called for a campaign fund, November 19, of \$3,000,000 to urge it at Washington and to reach the voters of all the States, calling for their expressions thereon. The Association declared that it would seek in the 1928 platforms of both major parties a declaration that will favor a referendum "in conscience binding" on all subsequent Democratic and Republican nominees for the United States Senate and House. If the proposal should be rejected, the Association contemplates a referendum in half a dozen or more States at recurring elections during the next three or four years, until all the States shall have been heard from.

Pro-Prohibition.—The National Temperance Council, representing thirty-one temperance and reform organizations, declared in Washington,

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D. C., December 2, its opposition to all Presidential candidates and party platforms "not outspokenly committed to prohibition and enforcement of the Eighteenth Amendment." On December 8, Dr. Ernest H. Cherrington, director of the newly created Department of Education and Publicity of the Anti-Saloon League, called for a fund of \$10,000,000 for an educational campaign, to which \$650,000 was immediately subscribed, the largest donor being S. S. Kresge, with a pledge of \$500,000. This was to be not only a national effort, but a world campaign, Dr. Cherrington said.

PROHIBITION

McAdoo.—In public debates and addresses throughout the year leaders of the two major parties expressed themselves on the question of national party policy with respect to prohibition. In a speech at Toledo, O., January 28, William G. McAdoo, Secretary of the Treasury under President Wilson, charged that Tammany Hall, already in control of New York State, was using the campaign against prohibition as a "smoke screen" to make a concerted advance upon the National Government. Mr. McAdoo called upon the President to seek of Congress measures to enforce the Eighteenth Amendment in states that had repealed or failed to pass enforcement acts. He argued that these states had violated their obligation under the Constitution, and that Congress lacks authority to repeal the Volstead law until another measure should be enacted to replace it.

Governor Smith.—As Mr. McAdoo had retired formally from his candidacy for the Presidency, Edwin T. Meredith of Iowa, formerly Secretary of Agriculture, on September 19, called upon the "dry progressive" element of the Democratic party to pick a leader in opposition to Governor Alfred E. Smith of New York, because Governor Smith had signed the repeal of the New York enforcement act. Judge George W. Olvany, leader of Tammany Hall, responded September 27, on behalf of Governor Smith: "Gov-

ernor Smith always has respected his oath of office and enforced the laws. If called upon to serve his country in a still higher position than that of Governor he would continue to respect his oath of office and enforce the laws. He could not do less."

Governor Ritchie, wet, of the non-enforcement state of Maryland, and Senator Carter Glass, dry, of Virginia, debated the issue at Charlottesville, Va., August 13. Mr. Glass predicted that there would be no declaration on prohibition in the National Democratic platform, and that it would not be a campaign issue. Governor Ritchie, on the other hand, proclaimed it an issue of state rights against Federal encroachment. Governor Smith, notwithstanding he had been warned by Senator Glass in a speech at Asheville, N. C., April 5, that he would be unsuccessful as a candidate for the Presidency on a wet platform, reaffirmed his wet position before the New York State League of Women Voters at Albany, December 2, saying: "One of the fundamental rights of citizenship is the right to organize to oppose any law or any part of the Constitution with which they are not in harmony."

Senator Borah.—On the Republican side Senator William E. Borah, of Idaho, began November 12, his campaign to make Prohibition the chief issue of the Presidential and Congressional contests in 1928. He had in Boston, April 8, debated prohibition with Nicholas Murray Butler, who upheld the affirmative side of the question: "Should the Republican National Platform of 1928 advocate the repeal of the Eighteenth Amendment?" In this debate Senator Borah charged a widespread conspiracy to nullify the amendment, and put this question: "What I ask of those who denounce the Eighteenth Amendment and say that it cannot be enforced is, 'What alternative do you propose to the American people? What are you going to give them in lieu of the Eighteenth Amendment?' We cannot talk of repeal unless there is some program to be submitted instead of the Eighteenth Amendment. We cannot venture upon an uncharted sea, not knowing whither we are go-

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ing." Dr. Butler replied that the amendment should be repealed, and the issue then left for the states to decide individually, and he called upon the Republican Party to lead in its repeal.

The Anti-Saloon League in its biennial convention in Washington, December 7, officially opposed any national party declarations in this resolution:

The principle of prohibition having been embodied in our national Constitution, is no longer proper material for party platforms. There is no way of making its position stronger legally than it now is, and only orderly repeal can make it legally weaker.

PRESENT STATUS

It appears, therefore, that while the agitation of wets and dries continues unabated and will be carried into the Presidential and Congressional elections of 1928, the business of enforcing national prohibition has been reorganized and placed, to a large extent, beyond political interference. With two or three exceptions, the work of enforcement proceeds with active state cooperation, with the result of curtailing the supplies of illicit liquors. Both Houses of Congress

are overwhelmingly dry and pledged to safeguard or strengthen the provisions of the Volstead Act. The percentage of Federal convictions is increasing, while the United States Supreme Court sustains the main provisions of the National Prohibition law.

More than half of the population, representing the white women voters and adolescents of both sexes, have benefited in health and reduced mortality during, if not because of, the prohibition regime, while the evils of alcoholism are reflected in a higher death rate only among adult negro males and females over 35, and to some extent white males over 35. In his annual message, December 6, President Coolidge said: "Smuggling has been greatly cut down, the larger sources of supply for illegal sale have been checked, and by means of injunction and criminal prosecution the process of enforcement is being applied. The same vigilance on the part of local Governments would render these efforts much more successful. The Federal authorities propose to discharge their obligation for enforcement to the full extent of their ability."

ELECTIONS OF 1927

By THOMAS N. HOOVER

PROFESSOR, OHIO UNIVERSITY

PRESIDENTIAL POLITICS AND ELECTIONS

The year 1927 has been a busy and an interesting one politically, although most elections were local in character. The chief political interests have been those relating to the coming Presidential election, which was well under way at the close of 1927.

In the Republican party, all was quiet until President Coolidge, in his famous sentence of August second, said, "I do not choose to be a candidate for President in nineteen twenty-eight."

Many were the interpretations given to the sentence. Some were quite sure that the President intended it to mean that he would serve

if he were nominated and elected, and that, because of the third term (what constitutes a term?) question, he desired to be drafted. Others were equally sure that he had eliminated himself from the race.

President Coolidge cleared the situation by his address to the National Committee on December sixth, when he requested that others should seek the Republican nomination.

Even before this, Senator Charles Curtis, of Kansas, had his hat in the ring for the Presidency. Senator Frank B. Willis of Ohio, soon afterwards announced his candidacy. Ex-Governor Frank Lowden of Illinois, Vice-President Charles G. Dawes, Senator William E. Borah of Idaho, are frequently mentioned as candi-

I. AMERICAN POLITICAL HISTORY

dates. Secretary of Commerce, Herbert Hoover, seems to be the first choice of a considerable number in all sections of the country.

The Republican National Committee selected Kansas City, Missouri, as the meeting place of the convention when it convenes in June.

On the Democratic side, Governor Al Smith of New York, seems to be in the lead, although there is considerable opposition to him because of the Prohibition question. Other Democratic possibilities are Senator Reed of Missouri, Governor Vic Donahey of Ohio, Ex-Senator Pomerene of Ohio, and others.

CHOICE OF U. S. SENATORS

There were no Senators elected in 1927. The newly-elected Senators to the 70th Congress, however, did not meet to be sworn in until the opening of the session, in December, 1927. Two of the Senators-elect, Wm. S. Vare of Pennsylvania, and Frank L. Smith of Illinois, were not given the oath of office, because of the enormous expenditure of funds in their campaigns for the Senate in 1926. There are many nice constitutional questions involved. How much money is too much to spend in a state-wide campaign for a nomination and an election. How far can either House go in the exercise of its powers to judge the qualifications and election of its own members? Does the Senate have power to deprive a state of its equal representation in the Senate without the consent of that state? Might the Senate dictate to a state its membership in the Senate? The more immediate result of the refusal to seat these two men is that the Upper House, for the opening weeks of the 70th Congress, was made up of 47 Democrats, 46 Republicans, and 1 Farmer Labor.

CHOICE OF REPRESENTATIVES

The members of the House of Representatives to the 70th Congress were elected in the fall of 1926, when a substantial Republican majority was returned. Since the election of that year, six vacancies have occurred, five by death and one by resignation.

A. E. B. Stephens, Second Ohio dis-

trict, died Feb. 12, 1927. He was succeeded by Charles Tatgenhorst, Jr.

Ladislav Lazaro, Seventh Louisiana, died March 20, 1927, and was succeeded by Rene L. DeRouen.

Walter W. Magee, 35th New York, died May 25, 1927, and was succeeded by Clarence E. Hancock.

William N. Vaile, First Colorado, died July 2, 1927, and was succeeded by S. Harrison White.

M. E. Crumpacker, Third Oregon, died July 24, 1927, and was succeeded by Franklin F. Korell.

James M. Hazlett, first Pennsylvania, resigned Oct. 20, 1927, and was succeeded by James M. Beck.

Mr. Beck's seat was questioned on the ground of his not being a legal inhabitant of Pennsylvania.

There are four women in the House of Representatives, viz., Florence P. Kahn, fourth district of California; Edith Nourse Rogers, fourth district of Massachusetts; Mrs. John W. Langley, tenth district of Kentucky; and Mary T. Norton, twelfth district of New Jersey. There are no women members of the Senate.

STATE GOVERNORS

In only two states, Mississippi and Kentucky, were governors elected in 1927. Theodore G. Bilbo, Democrat, was elected governor of Mississippi. Governor Bilbo is a pronounced dry, and will oppose the nomination for President by his party of any candidate who is wet or even moist.

The contest in Kentucky was one of the most spirited in years. Involved in the contest was the question of the repeal of the pari-mutuel betting law, which legalizes horse-racing. The Democratic candidate, J. C. W. Beckham, who has served two terms as Governor, favored the repeal of the pari-mutuel betting law. His opponent on the Republican ticket was Judge Flem D. Sampson, who did not oppose the pari-mutuel law. Mr. Sampson was elected by a majority of some ten thousand votes.

STATE LEGISLATURES AND PROBLEMS

In two states, New York and New Jersey, there were elections of members of the State legislatures. In

ELECTIONS OF 1927

each of these states, Republican legislatures were returned.

In several states, Constitutional amendments and legislative bills were referred to the voters. In New York, an amendment to extend the term of Governor to four years, and to throw the election into the Presidential election year was defeated by an overwhelming vote. This proposal was bitterly opposed by Governor Smith, and the defeat of the proposal is construed as a Smith victory. In New Mexico, the voters rejected an amendment to change the terms of state officers from two to four years.

In Ohio, there was a referendum on the "Marshall" bill. This bill passed the General Assembly, was not vetoed, nor was it signed by Governor Donahey. A petition was filed against it, and thus it came to the voters. It was claimed by its proponents that it would meet the objections of the present fee system for justices of peace and mayors, made null and void by the U. S. Supreme Court decision in the recent Tumey case. The bill was championed by the Anti-saloon League, but was opposed by many prominent "dry" leaders of the State, on constitutional grounds, and also because of the need of a thorough revision of the justice and mayoralty courts. The bill was defeated at the polls by the vote of 438,458 for and 916,016 against, thus losing by a majority of 477,558 votes. This can in no way be construed as a "wet" victory.

Another bill in Ohio, initiated by the chiropractors and not passed by the General Assembly, proposing a separate licensing board for chiropractors, was by the additional three-per-cent petition method, placed on the ballot, and was defeated by a majority of 242,481 votes.

MAYORALTY CONTESTS

There were few mayoralty elections that had great political significance. In Detroit, Mayor John W. Smith, champion of the "liberals," "wets,"

and candidate for reelection, was defeated by John C. Lodge, grand-uncle of Col. Charles A. Lindbergh. Harry A. Mackey, Republican, was elected mayor of Philadelphia, over J. Hampton Moore, Citizens' Party candidate, by an overwhelming majority. Mr. Mackey was the Vare organization candidate, and his election is a victory for Senator-elect Vare.

In a non-partisan race in San Francisco, Mayor James Rolph, Jr., won the election over James E. Power and Adolph Uhl. Rolph was 30,000 votes ahead of Power, his nearer competitor.

Mayor C. Clarence Neslen, Democrat, was defeated for re-election as Mayor of Salt Lake City by John J. Bowman, Republican.

Mayor James J. Thomas, Republican Mayor of Columbus, Ohio, and Mayor Fordis C. Parker, Republican Mayor of Springfield, Mass., were re-elected.

John W. Gray, Civil War Veteran, was again elected Mayor of Marietta, Ohio, the oldest city in Ohio.

A bitter contest was waged in Cleveland over the City Manager plan of government. The attempt to carry an amendment to the city charter, which would put an end to the City Manager plan, was led by former Governor Harry L. Davis, who was supported financially by politicians outside of Cleveland. The present City Manager, William R. Hopkins, led the opposition. The City Manager plan was victorious by a close vote.

Attorney L. E. Slack was appointed Mayor by the City Council of Indianapolis, to serve till January 1, 1930, when the City Manager plan becomes effective.

Mayor William Hale Thompson, of Chicago, has had a conspicuous place in the press of the country the past year because of his attack on certain historians as being pro-British. He has made an offer of \$10,000, for a textbook in history written to his liking.

I. AMERICAN POLITICAL HISTORY

COGNATE SOCIETIES

GENERAL

AMERICAN ANTIQUARIAN SOCIETY.—
Worcester, Mass.
AMERICAN BAPTIST HISTORICAL SOCIETY.—1701 Chestnut St., Philadelphia, Pa.
AMERICAN IRISH HISTORICAL SOCIETY.—132 E. 16th St., New York, N. Y.
AMERICAN JEWISH HISTORICAL SOCIETY.—38 Park Row, New York, N. Y.
AMERICAN HISTORICAL ASSOCIATION.—1140 Woodward Building, Washington, D. C.
AMERICAN NUMISMATIC SOCIETY.—156th St. at Broadway, New York, N. Y.
AMERICAN SCENIC AND HISTORIC PRESERVATION SOCIETY.—154 Nassau St., New York, N. Y.
AMERICAN SOCIETY OF CHURCH HISTORY.—98 Mercer St., Princeton, N. J.
CANADIAN HISTORICAL ASSOCIATION.—Ottawa, Ontario, Can.
HISPANIC SOCIETY OF AMERICA.—156th St., W. of Broadway, New York, N. Y.
HOLLAND SOCIETY OF NEW YORK.—New York, N. Y.
HUGUENOT HISTORICAL SOCIETY OF AMERICA.—2 W. 45th St., New York, N. Y.
LINCOLN HISTORY SOCIETY.—30 Irving Place, New York, N. Y.
METHODIST HISTORICAL SOCIETY.—150 Fifth Ave., New York, N. Y.

MISSISSIPPI VALLEY HISTORICAL ASSOCIATION.—Austin, Tex.
NATIONAL HISTORICAL SOCIETY.—37 W. 39th St., New York, N. Y.
NEW ENGLAND HISTORIC GENEALOGICAL SOCIETY.—9 Ashburton Place, Boston, Mass.
NORTHWESTERN ASSOCIATION OF HISTORY, GOVERNMENT AND ECONOMIC TEACHERS.—Spokane, Wash.
PRESBYTERIAN HISTORICAL SOCIETY.—520 Witherspoon Bldg., Philadelphia, Pa.
SOCIETY FOR THE PRESERVATION OF NEW ENGLAND ANTIQUITIES.—2 Synde St., Boston, Mass.
STEUBEN SOCIETY OF AMERICA.—405 Lexington Avenue, New York, N. Y.
THOMAS PAINE NATIONAL HISTORICAL ASSOCIATION.—12 E. 15th St., New York, N. Y.
UNITED STATES CATHOLIC HISTORICAL SOCIETY.—New York, N. Y.
WOODROW WILSON FOUNDATION.—17 E. 42nd St., New York, N. Y.

POLITICAL

DEMOCRATIC PUBLICITY COMMITTEE.—331 Madison Ave., New York, N. Y.
NATIONAL DEMOCRATIC COMMITTEE.
NATIONAL REPUBLICAN COMMITTEE.
WOMEN'S NATIONAL DEMOCRATIC CLUB, INC.—Hotel Wellington, Seventh Ave. and 55th St., New York, N. Y.
WOMEN'S NATIONAL REPUBLICAN CLUB.—6 E. 37th St., New York, N. Y.

DIVISION II

INTERNATIONAL RELATIONS AFFECTING THE UNITED STATES

THE UNITED STATES FOREIGN SERVICE

BY MARGARET DE FOREST HICKS WILLIAMS

WRITER AND SPECIALIST ON INTERNATIONAL AFFAIRS

ROGERS BILL REORGANIZATION

Services Merged.—A momentous and far-reaching change occurred in the status of the diplomatic and consular services of the United States when, on July 1, 1924, the so-called Rogers Bill became a law. By this Act, which was approved on May 24, 1924, the former diplomatic and consular services were merged into one, to be known thenceforth as the United States Foreign Service.

Prior to 1906, both the diplomatic and consular services were administered on a political basis. In that year the consular service was placed on a civil service basis, and three years later (1909) a similar status was accorded the diplomatic service also. There were, however, manifest improvements needed even after these two results had been brought about, and it was to effect these improvements that the Rogers Bill was drafted and made a law.

Purposes and Provisions.—The most obvious weaknesses of the former dual system centered about salaries, promotions, non-interchangeability of position between the two services, and the lack of adequate retirement provisions. The principal sections of the Rogers Bill (Public—No. 135—68th Congress; H. R. 6357) deals with these problems most effectively. By virtue of its provisions: (a) sufficiently adequate salaries are provided to make it possible for men not possessing independent means to enter the service; (b) sufficient reward for meritorious service is of-

fered to attract and hold able men by placing within the reach of all who show adequate ability the attainment of the grade of ministers; (c) foreign service officers may be assigned either to consular or diplomatic posts, the positions being interchangeable; (d) a retirement and pension system is inaugurated.

Analysis of Change.—Provision is made that "hereafter the Diplomatic and Consular Service of the United States shall be known as the Foreign Service of the United States."

The term "Foreign Service officer" shall be the designation of every member of the Foreign Service below the rank of minister, "all of whom are subject to promotion on merit and who may be assigned to duty in either the diplomatic or the consular branch of the Foreign Service at the discretion of the President."

The former diplomatic and consular classes are done away, and provision is made for nine new classes with salaries ranging from \$9,000 in class one, downward to \$3,000 in class nine; and with unclassified subordinate grades from \$3,000 downward.

Appointments to the position of Foreign Service officer shall be made only after examination and a suitable period of probation in an unclassified grade; or, after five years of continuous service in the Department of State, by transfer therefrom under such rules and regulations as the President may prescribe.

From time to time the Secretary of State shall report to the Presi-

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dent the names of Foreign Service officers showing special ability, or showing merit for promotion to the grade of minister; and the names of persons found upon taking the prescribed examinations to have fitness for appointment to the service. Re-classification of the former diplomatic and consular officers has provided the new grades, one to nine respectively, prescribed under the new law.

All Foreign Service officers must deposit a bond with the Treasury of the United States. Foreign Service officers inspecting either consular or diplomatic offices shall have the same duties, powers, and prerogatives formerly accorded the consuls general at large under the old system. A very important provision, in view of the fact that the Act does not raise the salaries of Ambassadors (\$17,500) or Ministers (\$12,000 and \$10,000), is that the President may grant them "representation allowances out of any money which may be appropriated for such purposes from time to time by Congress." Any Foreign Service officer may be assigned to the Department of State for a limited period without loss of class or salary. At the discretion of the Secretary of State, a Foreign Service officer may be ordered to the United States on statutory leave of absence.

Service officers may be appointed to serve as Counselors of Embassy or Legation, commissioners, *chargés d'affaires*, ministers resident, or diplomatic agents without loss of grade, class, or salary with, in certain cases, additional compensation. Foreign Service officers may be retired upon reaching the age of 65 years, annual pensions may be paid from an annuity fund secured by a yearly deduction of 5 per cent from salaries, and a commensurate yearly contribution to the fund by the Government. Retired Foreign Service officers may be recalled to active service, in the event of public emergency.

All former provisions of law not inconsistent with the present Act are made applicable, and all contrary provisions are repealed.

The titles Second Assistant Secretary of State and Third Assistant Secretary of State shall hereafter be

known as Assistant Secretary of State, without numerical distinction of rank. An additional Assistant Secretary of State replaces the former position of Director of the Consular Service. The Act went into effect July 1, 1924.

ADMINISTRATIVE REGULATIONS

Of equal importance with the Rogers Bill are the Administrative Regulations embodied in Executive Order No. 4022, June 7, 1924. These regulations give practical effect to all the chief purposes of the law. They set up the machinery whereby it is put into operation by providing for a Foreign Service Personnel Board, an Executive Committee, a Board of Examiners, a Foreign Service School, and a Foreign Service School Board.

BOARDS AND COMMITTEES

Foreign Service Personnel Board.—The duties of this board are to examine into the character, ability, efficiency, experience and general availability of all members of the Service with a view to promotion, transfers, the consideration of controversies or delinquencies, and the recommendation of those showing marked general ability to the rank of minister, as vacancies arise. The board is composed of the Under Secretary of State, who is chairman, an Assistant Secretary of State, the Assistant Secretary of State formerly known as the Director of the Consular Service, and members of the Executive Committee of the Foreign Service Personnel Board.

The Executive Committee.—The duties of the Executive Committee of the Foreign Service Personnel Board are left to the discretion of the Secretary of State and are prescribed by him. The board is composed of a chairman, and two other members who are Foreign Service officers of high rank representing both the diplomatic and consular branches of the Foreign Service. These three are selected by the other members of the Personnel Board with the approval of the Secretary of State.

The Board of Examiners.—The duties of this board are to formulate rules for and hold examinations of

THE UNITED STATES FOREIGN SERVICE

applicants for commission to the Foreign Service and to determine those who are fitted for appointment, and the scope and method of the examinations which shall be both oral and written and open only to American citizens of good standing between the ages of 22 and 35 and designated by the President for appointment subject to examination. The board is composed of the Under Secretary of State, an Assistant Secretary of State to be designated by the Secretary of State, the Assistant Secretary of State formerly known as the Director of the Consular Service, the Chairman of the Executive Committee of the Foreign Service Personnel Board, and the Chief Examiner of the Civil Service Commission or such persons as may be designated by him to serve in his stead.

THE FOREIGN SERVICE SCHOOL

Purposes.—The purpose of this school is to provide a one-year term of instruction in the Department of State as a period of probation for those successfully passing the examinations given by the Board of Examiners, and to adjudge, during this period, the new appointees to the Service, as to their qualifications for advancement and assignment to duty as a Foreign Service officer. The governance of the school is to be set forth in rules and regulations prescribed by the Secretary of State. The school is under the direction of the Foreign Service School Board.

The Foreign Service School Board.—The duties of this board are to act in all matters concerning the functions of the school with the approval of the Secretary of State; to select the chief instructor of the Foreign Service School from among the officers of the Foreign Service with the approval of the Secretary of State; and in its discretion to select other instructors from among the qualified officers of the Department of State, the Foreign Service, the executive departments of the Government, and other available sources. The board is composed of the Under Secretary of State, an Assistant Secretary of State to be designated by the Secretary of State, the Assistant Secretary

of State, the Assistant Secretary of State formerly known as the Director of the Consular Service, the Chairman of the Executive Committee of the Foreign Service Personnel Board, and the chief instructors of the Foreign Service School.

FOREIGN SERVICE PERSONNEL

Changes.—During 1927 one hundred and thirty-two persons took the examination for appointment as officers in the United States Foreign Service. Of this number 36 passed. Of the 36 persons 25 have successfully completed the probationary Foreign Service School course in the Department of State and have been commissioned as Foreign Service officers "unclassified," which is the lowest rank. One woman was commissioned in 1927, Miss Frances Willis. Several women took the examination and failed.

Promotion from Ranks.—A notable advancement to the grade of ambassador and minister from the ranks of the Foreign Service rather than from among those of distinguished citizens in private life has been evidenced in 1927. In 1925 the policy of appointing Foreign Service officers to ambassadorial and ministerial positions was formulated. In 1926, twenty Foreign Service officers held these distinguished posts. In 1927, three more were added to the list, and two were appointed Assistant Secretaries of State.

Losses to Service.—During 1927 there were four deaths, two retirements, and nineteen resignations from the Foreign Service. In most cases the cause of resignation was the small salaries which still, even with the passage of the Rogers Act, attach to the positions in the Service. It continues to be a practical impossibility for a man to occupy any of the higher ranks in the Service and maintain his position on his salary alone, a deplorable fact which obviously needs to be remedied by Congressional action.

RECLASSIFICATION

The practical results of the putting into effect of the provisions of the Rogers Act and Executive Order Num-

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ber 4022 may be seen from the following table which shows the reclassification from the old to the new status with salaries.

Former Classification	Former Salary	New Classification as Foreign Service Officer	New Salary	No. in Grade as of Oct. 1, 1926
Secretary, Class One..... (Counsel of Emb.).....	\$4,000	Class One	\$9,000	24
Consul General, Class One.....	12,000*	Class One	9,000	
Consul General, Class Two.....	8,000	Class One	9,000	
Secretary, Class One..... (Counselor of Leg.).....	4,000	Class Two	8,000	25
Consul General, Class Three.....	6,000	Class Two	8,000	
Secretary, Class One.....	4,000	Class Three	7,000	51
Consul General, Class Four.....	5,500	Class Three	7,000	
Consul General at Large.....	5,000	5,000	
Secretary, Class Two.....	3,625	Class Four	6,000	54
Consul General, Class Five.....	4,500	Class Four	6,000	
Consul, Class One.....	8,000*	Class Four	6,000	
Consul, Class Two.....	6,000	Class Four	6,000	
Consul, Class Three.....	5,000	Class Four	6,000	
Chinese Secretary.....	5,500	Class Four	6,000	
Japanese Secretary.....	5,500	Class Four	6,000	
Turkish Secretary.....	5,500	Class Four	6,000	65
Consul, Class Four.....	4,500	Class Five	5,000	
Secretary, Class Three.....	3,000	Class Six	4,500	76
Consul, Class Five.....	4,000	Class Six	4,500	
Chinese Asst. Secretary.....	4,000	Class Six	4,500	
Japanese Asst. Secretary.....	4,000	Class Six	4,500	
Turkish Asst. Secretary.....	4,000	Class Six	4,500	
Consul, Class Six.....	3,500	Class Seven	4,000	94
Secretary, Class Four.....	2,500	Class Eight	3,500	100
Consul, Class Seven.....	3,000	Class Eight	3,500	
Consul, Class Eight.....	2,500	Class Nine	3,000	0
Consul, Class Nine.....	2,000	Class Nine	3,000	
Vice-Consul of Career.....	2,500			
	2,750			
	3,000	Unclassified	3,000	165
Consular Assistants.....	1,500			
	2,500	Unclassified	2,500	
Interpreters.....	2,000	Unclassified	2,000	
Student Interpreters.....	1,500	Unclassified	1,500	

* Section 8 of the Rogers Act provides "that consuls general of class one and consuls of class one holding office at the time this Act takes effect shall not, as a result of their recommissioning or reclassification suffer a reduction in salary below that which they are then receiving: *Provided, however,* that this provision shall apply only to the incumbents of offices mentioned at the time this Act became effective."

DIPLOMATIC PERSONNEL

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AMBASSADORS

Country	Appointed	Com-mis-sioned
<i>Argentina</i>	Robert Woods Bliss 1927	Mr. Honorio Pueyrredon 1924
<i>Belgium</i>	Hugh S. Gibson 1927	High Highness Prince Albert de Ligne 1927
<i>Brazil</i>	Edwin V. Morgan 1912	Mr. S. Gurgel do Amaral 1925
<i>Chile</i>	William Miller Collier 1921	Señor Don Carlos G. Dávila 1927
<i>Cuba</i>	Noble B. Judah 1927	Señor Don Orestes Ferrara 1926
<i>France</i>	Myron T. Herrick 1921	Mr. Paul Claudel 1927

THE UNITED STATES FOREIGN SERVICE

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AMBASSADORS (Continued)

Country	Appointed	Com-mis-sioned
Germany	Jacob Gould Schurman 1925	Herr O. C. Kiep 1927 (Chargé d'Affaires. A. I.)
Great Britain ...	Alanson B. Houghton 1925	The Rt. Hon. Sir Esme Howard 1924
Italy	Henry P. Fletcher 1924	Nobile Giacomo de Martino 1925
Japan	Charles MacVeagh 1925	Mr. Tsuneo Matsudaira 1925
Mexico	Dwight W. Morrow 1927	Señor Don Manuel C. Téllez 1925
Peru	Miles Poindexter 1923	Dr. Hernán Velarde 1924
Russia		Mr. Serge Ughet, Financial Attaché, N. Y.
Spain	Ogden H. Hammond 1925	Señor Don Alejandro Padilla y Bell 1926
Turkey	Joseph C. Grew 1927	Ahmed Mouhtar Bey 1927
Union of Soviet Socialist Republics (No diplomatic relations)		(No diplomatic relations)

MINISTERS PLENIPOTENTIARY

Albania	Charles C. Hart 1925	Mr. Faik Konitza 1926
Austria	Albert Henry Washburn 1922	Mr. Edgar L. G. Prochnik 1925
Bolivia	Jesse S. Cottrell 1921	Señor Dr. Don Ricardo Jaimes Freyre 1923
Bulgaria	Charles S. Wilson 1921	Mr. Simeon Radeff 1925
Canada	William Phillips 1927	The Hon. Vincent Massey 1927
China	John Van A. MacMurray 1925	Mr. Sao- Ke Alfred Sze 1921
Colombia	Samuel H. Piles 1922	Dr. Enrique Olaya 1922
Costa Rica	Roy T. Davis 1922	Señor Don J. Rafael Oreamuno 1922
Czechoslovakia ..	Lewis Einstein 1921	Mr. Zdeněk Fierlinger 1925
Danzig, Free City of	Edwin Carl Kemp 1923 (Consul)	.....
Denmark	H. Percival Dodge 1926	Mr. Constantin Brun 1912
Dominican Republic	Evan E. Young 1925	Señor Angel Morales 1926
Ecuador	Gerhard E. Bading 1922	Señor Don Juan Barberis 1925 (Chargé d'Affaires A. I.)
Egypt	North Winship 1924 (Chargé d'Affaires, A. I.)	Mahmoud Samy Pasha 1925
Estonia	Frederick W. B. Coleman 1922	Colonel Victor Mutt, Con. Gen., N. Y., in charge of Legation 1927
Ethiopia	A. E. Southard 1927	
Finland	Alfred J. Pearson 1925	Mr. Axel Leonard Aström 1922
Greece	Robert P. Skinner 1926	Mr. Charalambos Simopoulos 1924
Guatemala	Arthur H. Giessler 1922	Señor Don Julio Montano Novella 1927 (Chargé d'Affaires A. I.)
Haiti	Christian Gross, 3rd Sec. 1926	Mr. Hannibal Price 1925
Honduras	George T. Summerlin 1925	Señor Don Luis Bográn 1925
Hungary	J. Butler Wright 1927	Count László Széchenyi 1922
Iraq	John Randolph 1923 (Consul)	
Irish Free State.	Frederick A. Sterling 1927	Mr. Timothy A. Smiddy 1924
Latvia	Frederick W. B. Coleman 1922	Mr. Arthur B. Lule 1927 (Con. Gen., N. Y.)
Liberia	William T. Francis 1927	
Lithuania	Frederick W. B. Coleman 1922	Mr. Kazys Bizauskas 1924
Luxemburg	Hugh S. Gibson 1927	Baron Raymond de Waha 1920 (Chargé d'Affaires)
Monaco	Otis A. Glazebrook 1927 (Consul)	
Morocco	Maxwell Blake 1927 (Dipl't Agent)	
Netherlands	Richard M. Tobin 1923	Mr. J. H. van Royen 1927
Nicaragua	Charles C. Eberhardt 1925	Señor Dr. Don Alejandro César 1927
Norway	Laurits S. Swenson 1921	Mr. Alexis H. G. O. Lundh 1926 (Chargé d'Affaires)
Palestine	Oscar S. Heizer 1923 (Consul)	
Panama	John Glover South 1921	Señor Dr. Don Ricardo J. Alfaro 1922
Paraguay	George L. Kreeck 1925	Dr. Juan V. Ramirez 1925 (Chargé d'Affaires)
Persia	Hoffman Philip 1925	Mirza Davoud Khan Meftah 1926
Poland	John B. Stetson, Jr. 1925	Mr. Jan Ciechanowski 1925

II. INTERNATIONAL RELATIONS AFFECTING THE U. S.

ACCREDITED BY UNITED STATES

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MINISTERS PLENIPOTENTIARY (Continued)

MINISTERS PLENIPOTENTIARY (Continued)				Com- mis- sioned
Country	Appointed			
<i>Portugal</i>	Fred Morris Dearing	1922	Viscount d'Alte	1902
<i>Rumania</i>	William S. Culbertson	1925	Mr. George Cretziano	1926
<i>Salvador</i>	Jefferson Caffery	1926	Señor Dr. Don Francisco A. Lima	1927
<i>San Marino</i>	Joseph E. Haven	1925		
	(Consul)			
<i>Serbs, Croats, and Slovenes, King- dom of</i>	John Dyneley Prince	1926	Mr. Voislav Antoniévitich	1927
<i>Siam</i>	Harold Orville Mackenzie	1927	Lt. Gen. Phya Vijitavonge	1926
<i>Sweden</i>	Leland Harrison	1927	Mr. W. Boström	1926
<i>Switzerland</i>	Hugh R. Wilson	1927	Mr. Marc Peter	1920
<i>Syria</i>	Harry L. Troutman	1926		
	(Consul)			
<i>Uruguay</i>	U. Grant-Smith	1925	Dr. J. Varela	1920
<i>Venezuela</i>	Willis C. Cook	1921	Señor Dr. Don Carlos F. Grisanti	1926

TREATIES COMPLETED AND RATIFIED

BY FRED L. SCHUMAN

DEPARTMENT OF POLITICAL SCIENCE, UNIVERSITY OF CHICAGO

TREATIES NEGOTIATED

The total number of treaties and executive agreements concluded between the United States and foreign governments since the last issue of THE AMERICAN YEAR BOOK is ten. This constitutes less than half of the number concluded during the preceding year. (Cf. THE AMERICAN YEAR BOOK, 1926, pp. 68-70.) The last agreement published in the Treaty Series at the time of going to press is No. 758, which figure indicates the total number of international agreements entered into by the United States since 1776. Of the ten agreements of the past year, seven were treaties or conventions ratified by the Senate, one was an exchange of notes and two were executive agreements entered into by the President or his agents.

Classification.—As classified by subject matter, two of the agreements, one with Spain and one with France, were conventions for the prevention of the smuggling of intoxicating liquor. One was a consular convention with Cuba. Three were conventions with the other American Republics for the protection of trade marks, the publicity of customs documents and the uniformity of nomenclature for the classification of merchandise. One, and the only one of

the ten of political importance, was a treaty with the same Republics for the avoidance or prevention of conflicts between the American States. One was an arrangement with Great Britain for the settlement of certain pecuniary claims arising out of the war, another an agreement with France for the acquisition of sites for battle monuments and the last a convention with Mexico extending the duration of the General Claims Commission.

OFFICIAL LIST OF TREATIES AND CONVENTIONS

- (1) Convention between the United States and Spain for the prevention of smuggling of intoxicating liquors, signed at Washington February 10, 1926, proclaimed November 17, 1926. (Treaty Series No. 749.)
- (2) Convention between the United States and Cuba, Consular, signed at Havana April 22, 1926, proclaimed December 2, 1926. (Treaty Series No. 750.)
- (3) Convention between the United States and other American Republics for the protection of commercial, industrial and agricultural trade-marks and commercial names, signed at Santiago April 28, 1923, proclaimed January 12, 1927. (Treaty Series No. 751.)
- (4) Treaty between the United States and other American Republics to avoid or prevent conflicts between the American States, signed at Santiago May 3, 1923, proclaimed January 12, 1927. (Treaty Series No. 752.)
- (5) Convention between the United States and other American Republics providing

TREATIES COMPLETED AND RATIFIED

for publicity of customs documents, signed at Santiago May 3, 1923, proclaimed January 12, 1927. (Treaty Series No. 753.)

- (6) Convention between the United States and other American Republics providing for uniformity of nomenclature for the classification of merchandise, signed at Santiago May 3, 1923, proclaimed January 12, 1927. (Treaty Series No. 754.)
- (7) Convention between the United States and France for the prevention of smuggling of intoxicating liquors, signed at Washington June 30, 1924, proclaimed March 12, 1927. (Treaty Series No. 755.)
- (8) Arrangement effected by Exchange of Notes between the United States and Great Britain for the disposal of certain pecuniary claims arising out of the recent war, signed May 19, 1927. (Treaty Series No. 756.)
- (9) Agreement between the United States and France for the acquisition of sites for monuments which the American Battle Monuments Commission is to erect in France, signed August 29, 1927. (Treaty Series No. 757.)
- (10) Convention between the United States and Mexico extending duration of the General Claims Commission provided for in Convention of September 8, 1923, signed at Washington August 16, 1927, proclaimed October 13, 1927. (Treaty Series No. 758.)

FRANCE AND SPAIN

The conventions with France and Spain for the prevention of the smuggling of intoxicating liquors into the United States are similar to a number of agreements concluded with other States for the same purpose. Each gives American officials the right to board and search the merchant vessels of France and Spain, respectively, outside of American territorial waters but within an hour's journey from the coast of the United States. In the event that reasonable cause is discovered for the belief that the vessel has committed or is attempting to commit an offense against American prohibition laws, it may be seized and taken into an American port for adjudication.

LATIN-AMERICA

Cuba and Mexico.—The convention with Cuba simply defines the rights, duties, privileges and immunities of consular officers in the familiar fashion. The convention with Mexico extends for two additional years from the date of signature the term assigned by Article II of the Conven-

tion of September 8, 1923, for the hearing, examination and decision of the claims for loss or damage by the General Claims Commission.

Other Powers.—The remaining agreements with the Latin American States grew out of the Fifth International Conference of American States held at Santiago, Chile, in 1923. One provides for the reciprocal protection of trade marks registered with the Inter-American Bureau, another requires the publication and interchange of all laws, decrees and regulations governing the importation or exportation of merchandise and the entry and departure of vessels from ports, and the third obligates the signatory States to adopt the Brussels nomenclature of 1913 in their statistics of international commerce. The treaty for the prevention of armed conflicts provides for the creation of a Commission of Inquiry of five members to which the signatories pledge themselves to submit all controversies not settled by diplomacy or arbitration in accordance with existing treaties. The Commission is required to report within a year, but its findings are purely advisory. After a lapse of six months for renewed negotiations, the parties may resume full liberty of action.

TREATIES PENDING RATIFICATION

The following international agreements were transmitted by the President to the Senate during the Second Session of the Sixty-ninth Congress, and are still awaiting action by that body:

- (1) Convention between the United States and the Republic of Panama for the settlement and amicable adjustment of claims by the citizens of each country against the other, signed at Washington July 28, 1926.
- (2) Convention between the United States and the Republic of Panama providing for the settlement of certain points of difference which have arisen out of the exercise by the United States of sovereign rights in the Canal Zone by virtue of the Panama Canal treaty of November 18, 1903, signed at Washington, July 28, 1926.
- (3) Convention signed at The Hague on November 6, 1925, by the plenipotentiaries of the United States and of the other Governments members of the International Union for the Protection of Indus-

II. INTERNATIONAL RELATIONS AFFECTING THE U. S.

trial Property, modifying the Convention of March 20, 1888, revised at Brussels on December 14, 1900, and at Washington on June 2, 1911.

- (4) International Convention signed at Paris on June 21, 1926, revising the International Sanitary Convention of January 17, 1912.
- (5) Convention for the unification of certain rules relating to bills of lading for the carriage of goods by sea and a protocol of signature thereto, which were signed on behalf of the United States by the American Ambassador at Brussels on June 23, 1925.

In addition to the above, the following agreements have been submitted to the Senate since the opening of the First Session of the Seventieth Congress, December 5, 1927.

- (1) Supplementary extradition convention between the United States and Honduras, signed at Tegucigalpa on February 21, 1927.
- (2) International Radiotelegraph Convention signed at Washington, November 6, 1927.

TREATIES REJECTED AND EXPIRED

Turkey.—On January 18, 1927, the treaty of amity and commerce between the United States and Turkey, signed at Lausanne on August 6, 1923, failed of ratification in the Senate by a vote of 50 to 34, lacking 6 votes of the necessary two-thirds. The reasons for its rejection are be-

lieved to be the absence of guarantees concerning naturalized American citizens of Turkish origin and sympathy for the Armenians whose aspirations for national independence have been sacrificed. The Turkish Government has agreed to extend until June, 1928, the *modus vivendi* of July 20, 1926, providing for most-favored-nation treatment in customs matters. By an exchange of notes with Rear Admiral Bristol, American High Commissioner in Turkey, on February 17, 1927, a temporary agreement was reached providing for the resumption of diplomatic relations, severed by Turkey April 20, 1917, and for further negotiations to settle outstanding difficulties and place Turkish-American relations on a stable basis.

Mexico.—The only treaty which has been terminated during the past year is the Convention between the United States and Mexico to prevent smuggling, etc., signed at Washington December 23, 1925, and proclaimed March 18, 1926 (Treaty Series No. 732). This agreement was to remain in force for one year and was terminated in accordance with its provisions on March 28, 1927, by notice given by the United States.

THE UNITED STATES AND WORLD AFFAIRS

By JOHN M. MATHEWS

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FOREIGN INDEBTEDNESS

Change in Debt Status.—Prior to the World War the United States was a debtor nation to the extent of over two billion dollars. This situation has been reversed so that, by 1927, American investments abroad were estimated by the Department of Commerce to be about thirteen billion dollars. These were private loans to foreign governments and industrial corporations and were exclusive of about ten billions of war-time debts owed to our government by the allied governments. This furnishes the American people a huge stake in the solvency and economic development of European nations which is

likely to have an even more important influence upon our foreign relations in the future than in the past.

Government Loan Supervision.—In the case of private loans to foreign governments or corporations floated in the United States, the State Department has adopted the policy since 1922 of indicating to the underwriting bankers whether or not such loans are objectionable from the standpoint of any national interest involved, without, of course, passing upon the merits of the loans from a business standpoint. Although this policy has subjected the Department to some criticism, it has proved useful in enabling it to put pressure upon cer-

tain foreign governments to induce them to enter into agreements for the refunding of the war debts. For such governments found themselves unable to borrow money in the United States—the only available money market—in the face of objections from the State Department. With but one or two exceptions all of the debtor nations have now entered into refunding agreements. In the case of France, however, the agreement has not been ratified but payments thereunder have nevertheless been made just as if it had been ratified. In February the War Debt Commission, whose life had been extended by Congress in 1925 for two more years, went out of existence automatically, but its work had been substantially completed.

Debt Revision Question.—Although the formal agreements effecting refunding of the war-time debts have been substantially completed, and, as far as the present policy of our government is concerned, are a closed chapter, the debate regarding their wisdom or folly continues unabated. The academic world seems practically united in the opinion that the debt settlements should be revised. At a session of the American Economic Association held in December the subject was discussed by four speakers, all of whom were in favor of revision. The debate seemed one-sided, probably because no reputable economist could be found who was willing to take the other side. Representative views of members of the academic profession were expressed in a statement issued by a group of Columbia University professors denouncing the settlements as unsound in principle and as causing European peoples to harbor a sense of grievance against us. They proposed that an international conference should be held to which we should send representatives "with directions to determine what settlement compatible with the demands of justice would seem best calculated to promote the future peace and prosperity of the world."

This statement was endorsed in March by a group of Princeton University professors, headed by President Hibben who accompanied the

statement with amplifying comment. Among other things, he said: "We do not desire to impose tremendous burdens of taxation for the next two generations on friendly countries. . . . To urge our Government's obligation to its citizen bondholders and taxpayers is to evade the real issue, which does not concern the relation of the Government to the people, but our national policy toward certain other states. To divorce the financial provisions of the loans from the moral situation in which they were asked for and given is to invent an unreal economic abstraction. . . . There is good reason to believe that in economics, as well as in morals, altruism is indistinguishable from true self-interest."

Government Attitude.—On the other hand, the administration at Washington and the majority of both branches of Congress, who presumably represent the views of the mass of the people, are practically united in the view that the debt settlements are wise and fair and that the United States has even been generous in requiring repayment not on a basis of total indebtedness but on the basis of capacity to pay. Secretary of the Treasury Mellon, in replying to President Hibben, among other things said: "We are now urged to cancel these debts because it is alleged that they were incurred in a common cause, but neither abroad nor in this country has it been suggested that, if this is to be done, we are to be reimbursed the dollars actually expended by us in France and Great Britain so that the goods and services they sold us might constitute their contribution to the common cause. . . . All of our principal debtors are already receiving from Germany more than enough to pay their debts to the United States. . . . The cancellation of that part of their debts which has not already been canceled will not of itself change their dislike into affection. Neither in international relations any more than in private life is affection a purchasable commodity, while my observation and reading of history lead me to conclude that a nation is hardly likely to deserve and maintain the respect of other na-

tions by sacrificing its own just claims."

British Reply to Mellon.—The British Government delivered a note to the State Department in which it undertook to answer certain assertions in Secretary Mellon's statement. The State Department, however, declined to be drawn into the controversy, contenting itself with pointing out that the interchange of views between Secretary Mellon and President Hibben was a purely domestic discussion.

THE UNITED STATES AND THE LEAGUE OF NATIONS

Cooperation Extended.—The former American policy of aloofness to the League which was evidenced by a failure even to reply to its communications has been abandoned. More and more we are collaborating with the League in the solution of particular questions which can be more carefully considered in special conferences called by the League than by the regular organs of the League itself.

During 1927 the tendency toward American cooperation with the League extended farther than ever. Thus, the United States was represented at the international economic conference by a distinguished delegation and also at the import and export restrictions conference by a delegation headed by the American minister to Switzerland. In addition we sent experts to represent us on certain technical committees, such as those on maritime tonnage measurements, double taxation, counterfeiting of currency, health, and drugs. We declined to participate in the conference on security and arbitration for fear that it might involve us in embarrassing commitments, but this may be regarded as an exception to our usual policy.

A number of American citizens continue to serve in responsible positions on various administrative agencies of the League. The interest of the American people in the organs and activities of the League is evidenced by the swelling tide of American tourists who visit Geneva. The possibility, however, of formal entrance and membership of the United

States in the League seems as remote as ever.

THE UNITED STATES AND THE WORLD COURT

Reservations Rejected.—It will be remembered that a conference was held in Geneva in the fall of 1926 for the purpose of considering the American reservations to the resolution of adherence to the World Court. The chief stumbling-block was the fifth reservation which would have prevented the Court from handing down an advisory opinion, without our consent, not only in cases in which the United States is a party or has an interest, but also in cases in which it claims an interest. This would give the United States the power of veto over practically any attempt on the part of other nations to secure advisory opinions.

The twenty-one member nations attending the Geneva conference sent a joint reply expressing an unwillingness to admit the United States on the basis of any special privilege in this respect. This seemed to end such small prospect as existed for American entrance into the Court, for although a few nations accepted unconditionally, the reservations by their own terms required that all the existing members of the Court should unequivocally accept them. Under these circumstances, certain members of the Senate who were opposed to American entrance into the Court under any conditions endeavored to secure the adoption of a resolution designed to rescind the original resolution of adherence. In February, however, the rescinding resolution was defeated in the Senate by a vote of 59 to 30.

Although technically this left the matter still open as far as we were concerned, practically the question of American participation in the Court has been closed, for the time being at least, by the refusal of the existing members to accept the American reservations. This situation seems to contradict the contention of those persons who predicted that European nations were so anxious to secure American adhesion that they would permit us to come in under any and

all conditions which we might lay down. The Administration has been urged to resume negotiations so as to overcome the existing *impasse*, but has thus far declined to do so.

THE UNITED STATES, PAN-AMERICANISM AND THE LEAGUE OF NATIONS

Pan-American Union.—Although the United States has declined to become a formal member of European political leagues, it is not only a member but the leading member of the Pan-American Union. The governing body of the Union is composed of the Secretary of State of the United States together with the diplomatic representatives of the Latin-American nations at Washington. The United States thus dominates the Union since all the members of its governing body must be at least *personae gratae* to our government. This situation has aroused dissatisfaction in Latin-American countries whose governments desire to assume a more independent position in the League of American states. Heretofore the Pan-American Union has confined its discussions and activities largely to social, economic, and scientific matters, carefully avoiding political questions.

There has been some suggestion from Latin-American writers that the field of usefulness of the Union should be broadened by the inclusion of political questions within its scope, not only as to mere discussion but also as to action. There is even some sentiment in the United States that our government should agree not to intervene in any Latin-American country without first consulting the governing board of the Pan-American Union. Although much might be said in favor of such a policy, the United States is not likely soon to adopt it. Our government has heretofore consistently opposed the bringing of political questions within the scope of the Union activities, since this might prove embarrassing in hampering the freedom of our unilateral interpretation of the Monroe Doctrine and in interfering with our desire to intervene in Nicaragua or other Latin-American states.

The Union and the League.—Although the Pan-American Union has thus not as yet developed into a political league of American states, it contains undoubted potentialities in that direction. Should such a development take place, it is interesting to speculate as to what the relations of the American league would be to the League of Nations having its headquarters at Geneva. As is well known, most of the Latin-American states are members of the Geneva League. The latter body has thus far discreetly avoided any attempt to intervene for the purpose of settling international difficulties. If such intervention were to be successfully carried out, it would be a blow at the Pan-American system and at the prestige and leadership of the United States in the Western World.

Panama Incident.—Although the League of Nations has not yet attempted to intervene in American international controversies, its assembly has, during the past year, served as a forum for the airing of a grievance, either real or fancied, of a Latin-American state against the United States. The delegate of Panama in the assembly of the League declared in the September meeting of that body that the real sovereignty over the Canal Zone remained vested in Panama and had not been transferred to the United States. He further stated that unless the United States recognized this claim, the League of Nations should intervene and the controversy should be submitted for settlement to an impartial tribunal, presumably the World Court. The Government of the United States, however, would undoubtedly refuse to recognize that the League of Nations has anything to do with any controversy which might arise with Panama over the sovereignty of the Canal Zone.

DISARMAMENT

American Objections.—During 1927 the United States continued to participate in the work of the Preparatory Commission on Disarmament sitting at Geneva. It found itself, however, unable to agree with many of the views embodied in the report of

the Commission. Among the proposals of the Commission with which the United States disagreed was that relating to the international supervision of the administration of agreements limiting armaments. It held that such a plan is calculated to engender suspicion and ill-will, while the true foundation upon which to construct such agreements is that of international good faith and respect for treaties. The United States also objected to the proposal of the Commission that military expenditures should be taken into consideration in the comparison or limitation of armaments, on account of the fact that wage scales and standards of living, the costs of personnel and material, vary so much from country to country as to render comparison practically impossible.

Limitation Discussion.—In contrast with the position of France and other continental powers, who hold that the various branches of warfare on land, on water, and in the air are interdependent and must be considered as a unit, the United States holds that it is feasible to discuss limitation of these various branches separately.

Question of Security.—The United States also steadfastly declines to become a party to any guarantees of security, which France holds should precede disarmament, rather than be produced by it. The United States regards security as a regional matter and does not deem itself to be directly interested in the question of European security. It was for this reason that our Government declined even to send an observer to attend the sessions of the security commission, which functions under the Preparatory Commission on Disarmament and is approaching the question of disarmament by way of arbitration rather than by technical arms limitation. The refusal of our Government to participate in the sessions of the security commission aroused the regret and chagrin of many lovers of peace in the United States.

Tripartite Naval Conference.—The outstanding event of the year regarding disarmament was the tripartite conference on naval armament called

by the United States and participated in by the United States, Great Britain, and Japan. France and Italy, although invited to participate, declined to do more than send informers, who are described as a grade or species one step lower than observers. President Coolidge, in calling the conference, suggested that the reduction of naval armament be considered as a separate proposition and that the 5-5-3 ratio applied by the Washington Conference of 1921 to capital ships should be applied to auxiliary vessels—such as cruisers, destroyers, and submarines—not included under the Washington Treaty. Although a preparatory commission was attempting to pave the way for a general disarmament conference, the President thought it desirable not to wait for that.

The conference met at Geneva in June but unfortunately was not able to come to an agreement. This was partly due to the failure of France and Italy to participate fully, but more largely to the lack of ability on the part of the delegates to make mutual sacrifices so as to compromise their extreme views. Without compromise, agreement was impossible. The delegations of the respective nations seem to have been dominated by the naval experts whose main object seems to have been to avoid any agreement which would result in naval limitation. The conference failed to observe Lord Cecil's formula of successful negotiation that "experts should always be on tap, but never on top."

"OUTLAWRY" OF WAR

Briand Proposals.—On April 6, 1928, Foreign Minister Briand of France proposed that France and the United States should publicly subscribe to a mutual engagement tending to outlaw war as between these two countries. This proposal has given rise to a great deal of discussion. It should be noted at the outset that the term "outlawry" of war is a misnomer. The only way to deal with an outlaw is by force, which in the case of a nation would mean war. It is better to speak of the proposal as one for the renunciation of war as

a means of settling international differences. Since such differences, however, will nevertheless arise, some other method of settling them must be found, such as arbitration, diplomatic compromise, or judicial determination. The United States already has an arbitration treaty with France, known as the Root-Jusserand Treaty of 1908, which, having been originally made for five years and renewed for successive five-year periods, expires in February, 1928. This treaty, however, excepts from the process of arbitration, questions involving national honor and vital interests. With France was also made one of the Bryan "wait-a-year" treaties of 1914, which did not entirely renounce war but pledged the contracting parties to wait a year before declaring war, during which time a commission of enquiry should make an investigation and report.

Negotiations.—The recent Briand proposal received comparatively little attention until near the close of the year, when negotiations began between Secretary of State Kellogg and French Ambassador Claudel with the object of embodying the proposal in the terms of a definite treaty. The administration was represented as being somewhat doubtful as to whether the United States Government could constitutionally enter into a treaty renouncing war, in view of the fact that the Constitution assigns to Congress the power to declare war. This view, however, seems clearly to be a mistaken one. Although a treaty could not legally deprive Congress of its power to declare war, a treaty renouncing war could at least place on Congress a moral duty not to exercise its power under certain circumstances. In fact many treaties in the past have placed such limitations on Congress, as, for example, the Bryan treaties mentioned above.

The Briand proposal had suggested merely a bilateral agreement with the United States. To our Government, however, it seemed invidious to make such an engagement with France alone without at least offering to enter into similar arrangements with other powers. Our Government even suggested a multi-lateral treaty

along these lines, but the attitude of the French Government was not favorable to this suggestion.

Capper Resolution.—The original Briand proposal suggested a renunciation of war without regard to whether it were defensive or aggressive. Many persons, however, believe it to be impracticable to renounce defensive war, but would ban aggressive war. This, however, raises the difficulty of defining what is meant by aggressive. Some persons believe that it is impossible to distinguish between defensive and aggressive, since a skilful diplomacy can always make it appear that any war entered upon is one of defence. If this be the case, then the only way to ban aggressive war is to ban all war. Nevertheless, in a joint resolution introduced in Congress by Senator Capper of Kansas at the convening of that body in December, an attempt was made to define an aggressor nation as "one which, having agreed to submit international differences to conciliation, arbitration or judicial settlement, begins hostilities without having done so." This definition may be criticised but is nevertheless an interesting approach to the solution of the question.

The Capper resolution is an attempt to give Congressional support to the proposed treaty embodying the Briand suggestion. It declares it to be the policy of the United States "by treaty with France and other like-minded nations formally to renounce war as an instrument of public policy and to adjust and settle its international disputes by mediation, arbitration, and conciliation."

Burton Plan.—In addition to the Capper resolution, two other peace or anti-war plans, known as the Burton and Borah plans, are before the country. The Burton plan is in the form of a joint resolution introduced in Congress in December by Representative Theodore Burton of Ohio, and, in effect, supplements the Capper plan. It is intended in part to meet the objection brought forward by certain European publicists that the insistence by the United States upon its neutral right to engage in the traffic in arms might seriously interfere

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with the attempt of a coalition of European powers, in carrying out their obligation under the Covenant of the League of Nations, to take coercive measures, military and economic, against an aggressive nation. In other words, it is feared that a blockade or boycott against such a nation could not be enforced unless the United States agrees to renounce its right to traffic in arms.

Here again is raised the question of the definition of an aggressive nation. European publicists would prefer that this be left to the determination of the League of Nations. Our Government, however, could probably not be induced to go this far and, by the Burton resolution, it is left to the President of the United States to determine when any country has violated any treaty, convention, or other agreement to resort to arbitration or other peaceful means for the settlement of international controversies by engaging in aggressive warfare against any other country. Upon such determination the export of arms, munitions or implements of war from the United States to such aggressive nation would be prohibited.

The Burton resolution is thus specifically confined to trade in "arms, munitions, or implements of war." Some British publicists apparently desire that the United States should go farther and renounce the right to traffic with an aggressive nation in all supplies which might even indirectly assist her in overcoming the effects of a blockade or economic boycott by a coalition of European powers. It is hardly likely, however, that our Government could be induced to go this far, since it would encroach too seriously upon our traditional concept of neutral rights and the freedom of the seas.

Borah Plan.—Finally, the Borah plan involves three proposals: first, the codification of international law; second, a declaration making all war a crime, and, third, the establishment of an independent international judicial tribunal. To these proposals it may be briefly answered that the first involves a long and difficult process; the second standing alone would be

a futile gesture; while, as to the third, we already have such a tribunal in the World Court.

RELATIONS WITH MEXICO

Better Outlook.—Fortunately, relations with Mexico during the year entered upon a more friendly phase. It is true that these relations were somewhat strained when the Mexican anti-alien land and petroleum laws went into effect in January. A diplomatic *impasse* between the two governments seemed for the time being to have been reached. Under these circumstances a demand arose in this country for the arbitration of the controversy. A resolution favoring arbitration was passed by the Senate by unanimous vote. President Coolidge, however, indicated that he was opposed to arbitration and declared that, in his opinion, the matter was susceptible of adjustment through negotiation. The tension between the two governments was greatly relieved when, in November, the Mexican Supreme Court, in a case in which an American petroleum corporation was a party, held unconstitutional two important articles of the Mexican petroleum law. Our State Department hailed the decision as promising an adjustment of the entire controversy.

Morrow and Lindbergh.—The appointment of Dwight Morrow as our new ambassador to Mexico seems to have been a happy one. He was received in that country with every expression of good will. Finally, the arrival of Colonel Lindbergh in Mexico after a non-stop flight from Washington as a sort of unofficial ambassador tended to cement the growing friendliness between the two countries.

RELATIONS WITH NICARAGUA

Armed Intervention.—During 1927 our relations with Nicaragua continued in a more or less unsettled state. The United States continued to support the conservative or Diaz government, although it was doubtful whether this government commanded the support of the majority of the Nicaraguan people. At any rate, it was too weak to maintain order without American assistance.

Consequently, the presence of American marines was deemed by our Government to be necessary in order to protect American lives and property. The American policy of armed intervention was subjected to sharp criticism in the United States. Senator Borah declared that "it ought to be regarded as a crime to defend by force and with American marines a title or a claim that cannot stand the inspection of an arbitrator."

Coolidge Statement.—On the other hand President Coolidge, in defending our policy, said: "We are not making war on Nicaragua any more than a policeman on the street is making war on passersby. We are there to protect our citizens and their property from being destroyed by war." He added this significant statement: "Toward the Governments of countries which we have recognized this side of the Panama Canal we feel a moral responsibility that does not attach to other nations. We wish them to feel that our recognition is of real value to them and that they can count on such support as we can lawfully give when they are beset with difficulties. We have undertaken to discourage revolutions within that area and to encourage settlement of political differences by the peaceful method of elections."

In other words, it would seem that the recognition by the United States of one of two contending factions in a Central American republic places upon us the positive responsibility to use force if necessary in maintaining in power the faction which we have recognized. Such American support is to continue at least until an election can be held which will presumably determine which faction has the largest popular support.

Stimson Mission.—To assist in carrying out his program, President Coolidge sent Henry L. Stimson as his personal representative to Nicaragua, who succeeded in inducing both factions to agree to his peace terms. These included among other things complete disarmament on both sides, organization of a Nicaraguan constabulary commanded by American officers and American supervision of the Presidential election to be held

in Nicaragua in October, 1928. Such supervision includes not merely the preservation of order at the time of the election but sufficient control over the preliminary steps, including registration, to see that every qualified voter has an opportunity to register. The American marines were to be left in Nicaragua for police duty until after the election. Although the two main contending factions agreed to these terms, one Sandino, a rebel general, refused to recognize them and, at the end of the year, was giving the Administration trouble by attacking the marines.

RELATIONS WITH CHINA

American Attitude.—The United States endeavored, during 1927, to maintain its traditional friendly attitude toward China in spite of the fact that that country was in the throes of a civil war and split up under regional governments. The disturbances and unsettled conditions incident to this war made it necessary for the United States to maintain naval forces in Chinese waters for the protection of American lives and property, since the Chinese authorities were either unable or unwilling to afford such protection.

The Treaty Question.—There has been much Chinese feeling aroused in protest against the injustice of the so-called "unequal treaties," that is, those treaties with Western powers which place China in a position of inferiority in respect to such matters as tariff dues and extraterritorial rights. The United States Government, desirous of adopting a liberal attitude toward Chinese nationalistic aspirations, indicated a willingness to enter into negotiations for the modification of these treaties. The difficulty, however, has been to find representatives of China with whom to negotiate. Since the treaties affect the whole of China they can only be modified through the negotiation of new treaties with representatives who are authorized to speak for the whole of China.

Porter Resolution.—Since the beginning of the twentieth century, the policy of the United States in respect to China has generally been one of

cooperation with the other Western powers. There are evidences, however, that the United States may now be approaching the adoption of a more independent policy. The Porter resolution, passed by the House of Representatives in February, favored independent negotiations by the United States with China for the revision of the treaties. Secretary Kellogg himself stated in January that the United States is ready to continue joint negotiations for the revision of the treaties "or to take up negotiations on behalf of the United States alone." The interest of the United States in China differs from that of the other Western powers and Japan because we have no concessions, spheres of influence, or leased territory. The only interest of the United States in China, as Secretary Kellogg declared in the statement mentioned above is that American

citizens "be given equal opportunity with the citizens of the other powers to reside in China and to pursue their legitimate occupations without special privilege, monopolies, or spheres of influence."

International Cooperation. — The United States, however, has not abandoned the policy of cooperating with the other powers in matters wherein there is a common interest at stake. Thus, in reference to outrages committed in Nanking against our citizens we presented with the other powers who had suffered like attacks identic notes of protest to the Nationalist Government. Under these circumstances, American military and diplomatic representatives cooperate with those of the other powers. There is, however, no unified command and American naval forces receive their orders from the Government of the United States alone.

LATIN-AMERICAN RELATIONS

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DIPLOMATIC PROGRESS

Mexico and Nicaragua.—The year 1927 has witnessed a remarkable increase in the attention paid to Latin-American relations. Among the major diplomatic problems of the year were the attempts on the part of the State Department to improve our relations with Mexico, and to work out a solution for the serious revolutionary situation in Nicaragua. It must be confessed that at first our efforts were none too successful, but when the situation seemed almost hopeless, President Coolidge sent Dwight W. Morrow as our new ambassador to Mexico, and former Secretary of War, Henry L. Stimson, as his personal representative to Nicaragua. The diplomatic skies hitherto so overcast immediately began to clear, and the year closed with the good will flights of Colonel Lindbergh to Mexico and Central America, a most successful appeal to cordial friendliness between the peoples of the United States and the Latin-

American countries clearly conceived and brilliantly executed.

Caribbean Policy.—Early in the year the palpable failure of our general Caribbean policy brought forth considerable criticism in the Senate. The opposition came to a head by the introduction by Senator Borah on February 22 of a resolution empowering the Senate Foreign Relations Committee "to investigate and study conditions and policies bearing upon the relationship between Central American countries, Mexico, and the United States and to visit such countries." Secretary Kellogg protested vigorously and succeeded in eliminating the investigation part of the motion when it was finally passed.

The constant criticism of American policies in the Caribbean brought forth a rather remarkable speech from President Coolidge on the occasion of the meeting of the United Press Association in New York City in April, 1927. After noting his acceptance of the Wilsonian principle

LATIN-AMERICAN RELATIONS

that recognition be accorded only to constitutionally established governments, President Coolidge laid down the rather startling extension that such recognition by its evidence of approval entailed the support of the United States. Having enunciated a frank policy of intervention, President Coolidge thereupon fixed the sphere of its operation in specific terms: "Toward the governments of countries which we have recognized this side of Panama we feel a moral responsibility that does not attach to other nations." If this be a blunt notice of American hegemony over its weaker neighbors to the south it at least has the merit of circumscribing "manifest destiny" to a definite area.

PAN-AMERICAN CONFERENCE

Towards the end of the year, however, when the question arose of choosing a delegation to attend the Sixth International Conference scheduled to meet in Havana, Cuba, in January, 1928, President Coolidge agreed to be present at the opening session as a special honor to Cuba on the thirtieth anniversary of her independence as well as to proclaim the friendliness of the United States. The personnel of the delegation indicated the desire of the United States to carry out this policy in the most effective manner. Headed by former Secretary of State Charles E. Hughes, it included Ambassador to Italy, Henry P. Fletcher; Ambassador to Mexico, Dwight W. Morrow; Ambassador to Cuba, Noble B. Judah; Ex-Senator Oscar W. Underwood, President Ray Lyman Wilbur of Stanford University, Dr. James Brown Scott of the Carnegie Endowment, and Dr. L. S. Rowe, Director-General of the Pan-American Union.

RELATIONS WITH MEXICO

Points at Issue.—It will be remembered that throughout the year 1926 the United States and Mexico had carried on a rather acrimonious diplomatic correspondence which indicated a very decided difference in interpretation on three points: (1) the alleged retroactive features of the land law and the petroleum law; (2) the

insistence on the part of the Mexican Government that foreigners submit themselves to Mexican jurisdiction in all disputes concerning their property on penalty that their property be forfeited if they should invoke the protection of their government; and (3) the nature of the agreements formulated at the Conference in Mexico City by the American Mexican commissioners in May, 1923.

Calles Overture.—Neither side would recede from its position, and early in 1927 President Calles suggested as a possible solution of the impasse that as a last resort the questions might be submitted to the Hague tribunal for settlement. A similar resolution put before the Senate by Senator Robinson of Arkansas on March 3, 1927, was passed by a vote of 79 to 0. Inasmuch as the treaty of Guadalupe-Hidalgo, signed in 1848, is still in force, and Article 21 provides that differences between the two countries be settled by arbitration, the proposal did not seem out of place. However when President Coolidge declared that nothing helpful would be gained by submitting the question to arbitration this method of solving the problem was dropped.

Attitude of Oil Interests.—In truth when we come to the facts of the situation it would seem as though the foreign oil companies for the most part have accepted the new legislation. The oil laws went into effect on January 1, 1927, and according to a statement issued by Secretary Morones of the Mexican embassy, 125 out of the 147 oil companies operating in Mexico had accepted the law. According to figures submitted by W. W. Liggett to the Senate subcommittee on foreign relations, out of 28,493,914 acres under development for oil, only 1,660,579 remained for which concessions had not been asked, and of this latter acreage 87% was owned or controlled by Edward Doheny, Harry F. Sinclair, and Andrew Mellon.

Untoward Events.—The situation in 1927 was made even the more delicate by a series of events which seemed to indicate a policy of retaliation on each side. The Mexican

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recognition of the Sacasa government in Nicaragua in December, 1926, and the support rendered to it after the United States had recognized Diaz was construed as an unfriendly act. The announcement by the State Department on March 22, 1927, that the anti-smuggling treaty with Mexico which had been signed only the year before would not be renewed was interpreted by some as making it possible for us to aid revolutionary parties in Mexico with shipments of arms. The presidential decree, effective June 18, 1927, forbidding any department of the Mexican government from purchasing supplies in the United States although disclaimed as a boycott of American goods was generally regarded as a measure of reprisal. Nevertheless in his presidential message, delivered to the Mexican Congress September 1, President Calles, although conceding that the situation had at times been difficult, expressed confidence that a spirit of cordial understanding would bring about a satisfactory settlement.

Era of Better Relations.—Apparently the peak of the difficulties had been passed, and four events occurred in the fall of 1927 which presaged an era of better relations. The first was the appointment of Dwight W. Morrow as ambassador to Mexico to succeed Mr. Sheffield, who had resigned in June. Although a representative of the financial interests, Mr. Morrow was noted for his broad-minded outlook and outstanding ability, and the impression generally indicated by the press of both countries was that a policy of compromise and cooperation on the part of the United States could now be anticipated. The second was the repeal by President Calles on October 27 of the decree prohibiting the purchase of goods in the United States by Mexican departments. The third was the unanimous decision of the Mexican Supreme Court rendered on November 17, 1927, granting an appeal restraining the Department of Industry, Commerce, and Labor from cancelling certain drilling permits of the Mexican Petroleum Company, an American concern which had not applied for a concession. The decision

declared Articles 14 and 15 of the petroleum law, which required companies to exchange their titles for fifty year concessions within one year, unconstitutional in so far as they applied to the case at bar. The State Department believed that an important step had been taken towards adjusting the entire controversy between Mexico and the United States. The fourth was the non-stop flight of Colonel Lindbergh from Washington to Mexico City, December 13-14, 1927. This one event had an immediate and remarkable repercussion on public opinion both in Mexico and in the United States, and made for a very considerable improvement in the mutual friendliness and appreciation of the two peoples.

Hearst Episode.—The only possibility of a return to the animosities of the preceding period seemed to lie in the publication by the Hearst press in November and December, 1927, of a series of documents alleging the expenditure of large sums of money by the Mexican government in Nicaragua and other Central American states to destroy American influence in this region. It was even alleged that over a million dollars was authorized to be paid three American Senators to obtain their friendly influence towards the Mexican government. The Mexican government denied categorically the authenticity of the documents and a Senate Committee speedily absolved the three American senators from any implication with the alleged work of propaganda. So many indications of fraud were evident in the allegations that the authenticity of the whole set of documents seems to be thoroughly discredited.

RELATIONS WITH NICARAGUA

Diaz Recognition.—When 1927 opened the United States had a squadron of some fifteen warships in Nicaraguan waters under the command of Admiral Latimer, with neutral zones established in various parts of the country policed by American marines. The United States had recognized the Diaz conservative regime as the constitutionally chosen administration, and was apparently willing

LATIN-AMERICAN RELATIONS

to maintain it in power by force if necessary. Various reasons were given for our intervention in Nicaragua: the protection of American lives and property, the maintenance of our canal rights, and the request on the part of the English and Italian governments for the protection of their nationals. In a message to the Congress on January 10, 1927, President Coolidge gave a clear statement of the facts of the situation, and in addition to the reasons already given he cited the shipment of arms and munitions from Mexico as especially provocative. Two days later Secretary Kellogg gave a statement to the press in which Russian Bolshevistic activity in Latin-America was strongly emphasized, but somehow these dangers had lost their potency to inspire fears.

Stimson Mission.—But something had to be done to assist Nicaragua which was rapidly becoming completely demoralized by the revolutionary activities of the two factions. On March 31, 1927, at the suggestion of the State Department President Coolidge appointed Henry L. Stimson, former Secretary of War, as his personal representative to go to Nicaragua and investigate the situation with a view to working out a solution of the difficulty if possible. Mr. Stimson conferred with the American Minister Eberhardt, with Admiral Latimer, who commanded the naval forces, and with the responsible leaders of both factions. He found both sides willing and even desirous of American assistance to end the deadlock.

Diaz Peace Terms.—President Diaz finally on April 22, agreed to make peace with the Liberals on the following terms: (1) immediate general peace in time for the new crop and delivery of arms simultaneously by both parties to American custody; (2) general amnesty and return of exiles and return of confiscated property; (3) participation in Diaz cabinet by representative Liberals; (4) organization of a Nicaraguan constabulary on a non-partisan basis commanded by American officers; (5) supervision of election in 1928 and succeeding years by Americans who

will have ample police power to make such supervision effective; (6) continuance temporarily of a sufficient force of marines to make the foregoing effective.

Tipitapa Conference.—Mr. Stimson thereupon arranged a conference with representatives of Dr. Sacasa who agreed to the arrangements provided it was acceptable to General Moncada, the Liberal general in the field. A conference in Tipitapa between Mr. Stimson and General Moncada took place on May 4, and the result was an acceptance on the part of the Liberal general, provided the United States would declare in a written statement that the retention of General Diaz and a general disarmament was regarded as essential conditions of the plan. This would make it easier for him to persuade his troops that they could not hope to overthrow Diaz. Mr. Stimson immediately gave such a written assurance. Finally in a more detailed statement dated May 11, 1927. Mr. Stimson promised a free, fair, and impartial election under American auspices in 1928, and pointed out that he had recommended changes in the Supreme Court and the Congress to the advantage of the Liberals, and the appointment of Liberal *Jefes politicos* in the six Liberal districts. He had already received assurances that these reforms would be carried out.

Sandino Operations.—General Moncada accepted the arrangement in a formal statement, and within a week Liberals and Conservatives had turned over some 9000 rifles, 300 machine guns and 6,000,000 rounds of ammunition. The one exception was a General Sandino, who retreating to the north with his force on July 16 attacked a detachment of marines and constabulary at Ocotal near the Honduran frontier. His repulse with heavy losses aroused a considerable stir in the United States but General Moncada in a public statement disavowed Sandino, denouncing him as a renegade Liberal at the head of outlaw mercenaries.

Since that time a number of rather sanguinary engagements have taken place between the marines and the rebel forces and the year closed with

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an engagement in which a number of marines were killed.

The Outlook.—With this exception the situation seems to be favorable for a period of reorganization and peace. President Diaz has reorganized the Supreme Court and has turned over to the Liberals the governorship of the six Liberal provinces. The constabulary is being rapidly trained and violent outbreaks seem to have come to an end. President Coolidge has nominated General Frank R. McCoy as chairman of the National Board of Elections, an officer who has had long experience in Cuba and Central America. At the suggestion of the Nicaraguan government the State Department in November appointed Dr. W. W. Cumberland, formerly financial adviser to the government of Haiti, to make a financial and economic survey of Nicaragua with a view to the advisability of a loan for the payment of claims, for the establishment of a national guard, and for the construction of such public works as are urgently needed. Whether or not the intervention was justified in the be-

ginning, and certainly it would have to be defended on a basis of policy rather than one of law, the results would seem to be beneficial to all concerned, and may prove to be instrumental in strengthening rather than weakening the independence and sovereignty of Nicaragua.

SOUTH AMERICA

The Tacna-Arica dispute which held the floor as the outstanding international problem in South America during 1926, remains in exactly the same status as at the end of 1926. The Kellogg proposal which suggested the cession of the province to Bolivia, was not answered by Peru until January 12, 1927, and then it was rejected, principally upon the ground that Peru was unable to sacrifice the rights of her citizens in Tacna and Arica in return for a money consideration. She suggested neutralization as a possible solution, and held the door open for other proposals, but the present Chilean government seems disposed to proceed to the complete Chileanization of the region.

ORIENTAL AND NEAR EASTERN RELATIONS OF THE UNITED STATES

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CHINA

Civil War.—During the entire year 1927 political conditions in China, both internal and international, continued to be greatly disturbed. Externally the principal events were various declarations by Great Powers, negotiations with the different Chinese groups, and measures taken to protect the lives and property of citizens of the various Powers. In brief, a condition of civil war prevailed in several parts of the country, the most conspicuous phase being that between the forces of the Kuomintang and those of Marshal Chang Tso-lin and allies. During the first half of the year the former were almost continuously successful. A rift then widened rapidly between the

Communist and Democratic wings of the party, which was so far weakened that its troops were forced back south of the Yangtse River. Unity was gradually restored, and with the help of forces from the West control was obtained by the end of the year of a large part of North China, but not including Peking.

British Memorandum.—The British Government published on Christmas Day, 1926, a memorandum on Chinese policy which proposed a number of changes in the international relationships of China. The Treaty Powers of the Washington Conference were recommended to give practical recognition to the Canton Government, to proceed toward reduction of foreign control as rapidly as possible,

to negotiate for a revision of treaties, to modify extraterritoriality, and to put in force promptly the tariff increases known as the "Washington surtaxes." The memorandum appeared to certain governments to be too liberal, but Chinese Nationalists found it inadequate to meet their demands. They desired immediate removal of foreign control, abolition of the privilege of extraterritoriality and the establishment of complete customs autonomy. General Chang Tso-lin declared against the immediate abolition of the foreign treaties, favoring the methods suggested at the Washington Conference.

Negotiations.—In the early days of January difficulties developed at Hankow and Kiukiang, during which Chinese forces obtained possession of the British Concessions in those cities. The British Government began on January 27th to negotiate both at Peking and Hankow, presenting a proposal which looked toward a considerable reduction of the rights of foreigners in China. Meantime the American Minister, John V. A. MacMurray, and the Consuls had advised Americans to leave the interior. Various missionary schools and colleges were closed or turned over to complete Chinese administration. Extensive military and naval movements in the direction of China were begun by Britain, Japan, and United States. The American Minister presented to the leaders of both North and South on February 4th a proposal to eliminate the International Settlement of Shanghai from the zone of warlike activities. Neither side agreed, and the European forces at Shanghai were increased steadily. The United States House of Representatives passed a resolution on February 21st recommending to the Government independent negotiations with China for the revision of treaties. The Department of State announced on February 25th that no new arrangement had been made with any country for using military and naval forces of the United States in China. The soldiers, sailors, and marines of United States then in China or en route thereto were there solely for the purpose of affording protection

to the lives and property of American citizens.

Foreign Consulates Attacked.—The time of the Vernal Equinox brought great success for the Nationalists. After a well-regulated approach their forces took Shanghai on March 21st with but little fighting. There were some looting and terrorism in the Chinese quarters but little disturbance in the foreign settlements. Two days later the Nationalists took Nanking, the last position held by Northerners south of the Yangtse River. Next day looting began there, accompanied by attacks on the foreign consulates and other properties. The American Consul departed under fire, which was replied to by American and British war vessels. Naval officers in command sent an ultimatum to the Nationalist General demanding protection for all foreigners and their property. In the struggle at Nanking, seven foreigners were killed, including one American, Dr. J. E. Williams, Vice President of Nanking University.

American Forces in China.—These events led to the sending of additional American forces to China. The State Department published a report showing that on January 1, 1926, there had been 15,038 Americans in forty-four Chinese cities. At the end of the month General Chiang Kai-shek declared willingness to take full responsibility and give full satisfaction so far as Nationalist troops had participated in the injuries to foreigners.

Reparations Demands.—On April 11 a joint note was presented by the United States, England, Japan, France, and Italy, to Eugene Chen at Hankow and to General Chiang Kai-shek at Shanghai demanding punishment for those guilty of the outrages at Nanking, an apology from the Commander-in-Chief of the Nationalist Army, and complete reparation for personal injuries and material damage. Chen promised reparations for damage done to the American Consulate and for injuries and material damage done to American citizens, except that caused by the naval bombardment or by Northern agents. As regards the punishment

of commanders and the demand for apologies, they should await the results of investigations by commissions, which should also investigate the circumstances of the bombardment of Nanking by the naval forces of the United States. A termination of the régime of unequal treaties was presented as the best guarantee for the effective protection of American and other foreign lives and property in China.

March of Events.—On June 18th General Chang Tso-lin assumed the dictatorship of North China under the title "Generalissimo of the Forces for the Suppression of Communism." He thereupon took control of the Peking Government, and appointed a new cabinet. In July the Nationalist forces, which had been supposed about to capture Peking, were defeated and driven back toward the Yangtse. Foreigners returned to Nanking and found the situation quiet, with business stagnant. Because of the growing dissensions, General Chiang Kai-shek resigned on August 8th as Commander-in-Chief of the Nanking army. He suggested as the way out of difficulties that the Hankow and Nanking factions should come to agreement, that the campaign to the north should be continued, and that the party should continue to expel Communists. General Sun Chuan-fang pursued the retreating Northern armies across the Yangtse but was beaten and thrown back to the north of the river.

A new movement toward Peking was begun October 3rd by General Feng and General Yen Hsi-shan, of Shansi Province. This proceeded as far as Kalgan and Paoting-fu, and then was checked. Yen was thrown back, but Feng presently resumed his eastward advances, and entered Shantung Province. A new government was set up at Nanking, which claimed to bridge over the separation between the Hankow and Nanking factions of the Nationalist Party. Nevertheless peace was not attained and there was actually some fighting between representatives of the groups. Troubles developed at Canton and the monthly remittances from there to Nanking ceased. The Nanking Gov-

ernment attempted to raise a loan in Shanghai.

Admiral Mark L. Bristol was transferred in the middle of the year from his position as American High Commissioner in Turkey to a similar extraordinary diplomatic position in the Far East.

Mission Work Suffers.—The extensive work of American missionaries, in its evangelistic, educational, and medical phases, suffered most severely during 1927. Some property was destroyed, while the bulk of the missionary investment was obliged to be left in Chinese hands. In many cases it was made over permanently to Chinese management. Most of the missionaries left China, or at least its interior cities, and few had returned by the end of the year.

JAPAN

The New Emperor.—The Emperor Yoshihito died December 25, 1926, and was succeeded by the Prince Regent Hirohito, considered to be the 123rd Emperor of Japan in the line of Jimmu Tenno. The new Emperor was twenty-five years old and had been Regent for five years. The Imperial Coronation Ceremonial was arranged to take place at Kyoto in the fall of 1928.

Financial Crisis.—A difficult financial situation began in March with the failure of certain banks, which brought about a serious crisis when on April 5th the great Suzuki Company failed with liabilities of about two hundred and fifty million dollars. This resulted from what might be called "frozen paper" connected with the great earthquake of 1923, with fresh emphasis given by a smaller earthquake early in 1927. The government was accused of failure to cooperate, and fell. Baron Tanaka became Premier on April 18th, and announced a vigorous policy of economic improvement. A bank moratorium was declared and a large loan approved to guarantee the note issues of the Bank of Japan. In the autumn plans were initiated for the establishment of strongly organized banks in place of those which had failed. American bankers visited the country and discussed the possibilities of lending

funds for the extension of the South Manchurian Railroad.

Harris Memorial.—A monument was unveiled at Shimoda on October 1st in commemoration of the arrival in Japan in 1856 of Townsend Harris, the first American envoy to that country.

TURKEY

Treaty of Lausanne.—The Senate of the United States finally brought to a vote the Treaty of Lausanne which was negotiated in 1923. The Treaty was rejected on January 18th, whereupon the United States Government arranged a *modus vivendi* as regards relations between citizens of the two countries, and exchanged ambassadors. Business connections between the United States and Turkey continued without serious fluctuation.

Political Events.—In preparation for the Parliamentary Elections, President Mustapha Kemal Pasha was given by the People's Party sole rights in nominating candidates. As a result the election amounted practically to an approval by popular vote of the President's choices for the National Assembly. In Turkey, as in Russia and Italy, the existence of only one political party is recognized. The new Assembly contains only about half of its former membership, and consists mainly of younger men, including a large proportion of trained experts in economic, financial, agricultural, and professional directions.

The Turkish Tribunals of Independence were dissolved in March, but a measure of martial law was prolonged for two years. The government continued to press measures of a nationalistic character, such as to require foreign firms to employ mostly Turks, and to use the Turkish language for all correspondence within the country.

Bristol Agreement.—The agreement concluded by Rear Admiral Mark L. Bristol, American High Commissioner, on February 17th, provided for the reestablishment of full diplomatic and consular relations and the speedy appointment of ambassadors. The essential provisions

of the Turkish-American Treaty signed at Lausanne, August 6, 1923, and its annexes, became the basis of relations between the nationals of the two countries, pending the possible ratification of this treaty. The most-favored-nation treatment as regards customs was extended for one year with automatic prolongation.

Diplomatic Appointments.—Joseph C. Grew was on May 20th appointed American Ambassador to Turkey. Ahmed Mukhtar Bey was later appointed Turkish Ambassador to Washington. Mr. Grew was received in Angora on October 12th, and Mukhtar Bey in Washington on December 5th.

EGYPT

Political Events.—A new session of Parliament was opened on November 18, 1926, and the Nationalist leader, Zaghlul Pasha Saad, was again elected President of the Chamber of Deputies. In this capacity he maintained harmonious relations with the Prime Minister Adly Pasha, and also with Sarwat Pasha, who succeeded to that position on April 18, 1927. At that time the aged leader was in bad health, and he died on August 23rd, to the great sorrow of a large proportion of the people of Egypt.

The *Wafd* or Delegations Party elected Mustapha Pasha Nahas as party leader, and later as President of the Chamber of Deputies, in place of the deceased Zaghlul Pasha. It endorsed a manifesto in support of Zaghlul's principles, purposing to strive for complete independence and to cultivate friendly relations with foreign powers and particularly with England. It maintained the coalition agreement with other parties.

Rift with England.—A crisis arose in June when Parliament considered increasing the size of the Egyptian army and vesting the power to control it in the Army Council instead of the British Sirdar. The Parliamentary War Committee also failed to recommend continuing the annual contribution of \$3,750,000 toward the Sudan Administration. The British Government addressed a firm note to the Egyptian Government on May 30th, and at the same time ordered warships from Malta to Alexandria

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and Port Said. The questions in dispute were adjusted by a compromise, in which the *status quo* was substantially continued pending a new general readjustment.

King Fuad and Prime Minister Sarwat Pasha were in England in July, after which the king visited several continental countries of Europe, returning to Egypt in November. During this time much progress was made toward negotiating a treaty between Britain and Egypt, which it was hoped would settle all matters of controversy between the two countries. The terms of the treaty had not been announced by the end of the year. Proposals were also made looking toward the gradual abolition of the capitulations in Egypt.

PALESTINE

Administration.—The government under High Commissioner Lord Plumer continued throughout the year the smooth operation of the administration. A loan of \$22,500,000 was arranged after long negotiation, much of which money went to the British Government in payment for railways, roads, telegraph, and other improvements. A large fraction of the remainder was set aside for improving the harbor at Haifa.

Economic Conditions.—Economically the situation was depressed throughout the year. Bad crops in 1925, land speculations and boom conditions in 1926, and a larger immigration than the country could absorb led to a crisis. Some firms failed, there was much unemployment, and emigration became greater than immigration. The heavy adverse balance of trade was only partially compensated for by expenditures of tourists. Palestine was further injured by a short but severe earthquake on July 11th, which caused about a thousand casualties, and the destruction of one or two million dollars' worth of property.

Zionist Congress.—The critical economic conditions in Palestine were seriously discussed at the Fifteenth Zionist Congress, which met at Basle from August 30th to September 12th. With some difference of opinion, confidence was voted in the British Ad-

ministration, and Dr. Chaim Weizmann continued to exercise the central influence.

Rockefeller Gift.—Announcement was made on November 13th that the Government of Palestine had accepted an offer from John D. Rockefeller, Jr., of two million dollars for establishing a museum of Palestinian Archaeology in Jerusalem.

SYRIA

M. Henri Ponsot continued to be High Commissioner of France in Syria during 1927. The rebellion of the Druses and the Nationalists died down during this time, and there was much discussion of an improved organization of the French Mandate in Syria. M. Ponsot was in France from January until June. After his return, he announced a policy looking toward ultimate independence for the subdivisions of Syria, but during the remainder of the year little change of a positive character was announced beyond a modification of the Constitution of the Lebanon.

IRAQ

British Treaty.—General Jafar Pasha el Askari became head of the Cabinet on November 21, 1926, and maintained the position throughout 1927. The chief business of his administration was the negotiation of a new treaty with Britain, which was not ready for publication until December of 1927. During the year internal conditions were on the whole peaceful and prosperous. The principal new provisions in the treaty with Britain are the recognition of Iraq as "an independent sovereign state," and a promise of British support of Iraq's candidacy for admission to the League of Nations in 1932. British influence through the High Commissioner continues to be strong.

Oil Interests.—The Turkish Petroleum Company put down a first well in the neighborhood of Mosul in the latter part of the year, with excellent results. The participation of American interests was finally arranged to the amount of 23.75 per cent, divided between five American companies.

INTERNATIONAL CONFERENCES

PERSIA

American Advisers.—Persia remained in a state of general quiet and order during the year 1927 under the administration of the new Shah, Riza Pehlevi. The work of the American advisers had succeeded in establishing the finances of the country on a sound basis, besides accumulating a considerable fund for the building of railroads. The term of service of Dr. A. C. Milspaugh, Administrator-General of the finances, came to an end in the summer, and the new contract submitted to him contained considerable restrictions upon his powers. He declined to submit to these, and left the service on August 3rd. Most of the remaining American advisers continued to serve, pending a new adjustment of the control. Certain American railway experts, headed by W. B. Poland, were added to the group.

Railways.—The Parliament in February instructed the government to begin the construction of a railway from the Persian Gulf to the Caspian Sea. It is hoped that the railway will be finished within ten years.

Revenue from the new sugar and tea taxes is expected to produce seven million dollars per year for railway construction.

Foreign Privileges Cancelled.—The Persian Government announced on May 10th that at the end of one year all special jurisdictional privileges enjoyed by citizens of other powers than Persia would come to an end.

ARABIA

King Ibn Saud spent the beginning of the year in his interior capital, Riadh. The Moslem Congress was not re-assembled at Mecca during the time of pilgrimage in July. Many measures were undertaken for improving the health conditions surrounding pilgrims, and for establishing good order and security in the Hejaz. A treaty between England and Arabia was signed on May 20. The terms as later announced included recognition by Britain of "the complete and absolute independence of the Hejaz, Nejd, and dependencies"; mutual guarantees of good relations, and co-operation in the suppression of the slave trade.

INTERNATIONAL CONFERENCES

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THREE-POWER NAVAL CONFERENCE

Purpose.—The year 1927 has witnessed the participation of the United States in several important international conferences. Probably the most important was the Three-Power Naval Conference convened by President Coolidge at Geneva in June, 1927. The purpose of this conference was to bring about a treaty limitation of those classes of vessels which had not been covered by the Washington Naval Treaty of February, 1922—namely cruisers, destroyers and submarines. The Conference was attended by the United States, the British Empire and Japan. France and Italy declined the invitation partly on the ground that any such separate conference would hinder the disarmament work of the League of

Nations. The Conference lasted from June 20 to August 4.

While three plenary sessions were held, largely formal in nature, the bulk of the work was done in private sessions of the Technical and Executive Committees, and in informal meetings. The Conference failed to reach any agreement upon the following points: (1) the question of ratio; (2) the question of eight-inch gun cruisers; (3) the amount of tonnage.

Question of Ratio.—The American delegation, headed by Hugh Gibson, proposed that the 5-5-3 ratio, established at the Washington Conference for capital ships, be extended to cruisers, destroyers and submarines. The British delegation was originally silent as to this proposal. But at

the second plenary session on July 14, Mr. Bridgeman, the First Lord of the Admiralty and head of the British delegation, declared that the British Government had already agreed to the principle of equality with the United States in regard to cruisers. Following this announcement, the British Cabinet called its delegation to London where several members declared that the British Government should not agree to parity with the United States. In two speeches following the Geneva Conference, Winston Churchill, Chancellor of the Exchequer, declared that the British Empire, because of its special needs, could not embody "in a solemn international agreement any words which would bind us to the principle of mathematical parity in naval strength."

Question of the 8-inch Gun.—The second difference arose over whether or not the number of large cruisers, carrying 8-inch guns, should be limited. The British delegation at Geneva proposed that cruisers be divided into two classes; the first class to be composed of 10,000 ton eight-inch gun cruisers, which should be limited in number, and the second class, to be composed of 6,000 ton 6-inch gun cruisers. The British argued that the first class of cruisers should be limited because they could be used for offensive purposes, while the small cruisers were useful only for purposes of defense. The British claimed that a 10,000 ton cruiser had two and a half times the power of a small cruiser. Should the United States utilize its total tonnage in the construction of a few 10,000 ton cruisers, it would have a much more powerful fleet than a British fleet composed of a large number of small cruisers.

Size of Cruisers.—But the American delegation pointed out that the British Government had taken the lead in constructing 10,000 ton cruisers. In the summer of 1927 Great Britain had practically completed the construction of five such cruisers and had six more laid down. It had also constructed four vessels with a designed tonnage of 9,750 each. The United States, had, however, only

two 10,000 ton cruisers about 15% completed and six more for which contracts had just been let. Moreover, a 10,000 ton cruiser has a much greater cruising radius than a small cruiser. The British Empire has naval bases dotted throughout the world where its vessels may frequently refuel. But the United States has few naval bases, and consequently any restriction on the fuel-carrying capacity of its vessels would weaken the strength of the American Navy.

Use of Liners.—It would be more expensive to build and maintain a large number of small ships than a small number of large ships. Furthermore, it was implied that if the number of American 8-inch gun cruisers were limited, the American Navy would be at the mercy of armed British merchant ships in time of war. According to Mr. Gibson, the British Merchant Marine contains 888,000 tons of fast merchant vessels, in comparison with 188,000 tons for the United States, which in time of war might be converted into cruisers and mounted with 6-inch guns. It is the opinion of American naval officers—but an opinion not shared by British officers—that a fast liner thus armed could put up a strong fight against a 6-inch gun cruiser, but that it could not put up such a strong contest with a 10,000 ton 8-inch gun cruiser. For these various reasons, the United States declined to consider the British proposal that the number of large cruisers, carrying 8-inch guns, should be limited to twelve each for Great Britain and the United States and eight for Japan.

Safeguard Clause.—In a final effort to meet the argument that the unlimited construction of 10,000 ton cruisers would be a menace to British security, the American delegation suggested the insertion of a "safeguard" clause in the treaty providing that if the building program of any one of the powers within the total tonnage limitation agreed upon should give concern to any power, a meeting of the powers might be called any time after 1931 and if a satisfactory agreement could not be reached in such a conference, the treaty might be terminated within a

year. This proposal was not accepted by the British delegation. In a speech in the House of Lords on November 16, Viscount Cecil, a member of the British delegation, declared that it was "madness" for the British Government to terminate the conference because of its demands in regard to limiting the 8-inch gun.

Question of Tonnage.—At the first session, the American Government proposed a maximum tonnage in auxiliary craft of 640,000 tons for the British Government and the United States, of which 300,000 tons should be for cruisers. On July 8, the British delegation announced that it required a total tonnage of 875,000 tons while on July 28, it stated that these needs could be reduced to 737,000 tons. While it thus reduced its tonnage, the British delegation did not name a figure which the American Government would accept. Moreover, the British delegation never swerved from insisting upon the right to maintain 70 cruisers.

The adoption of the original American proposal would have limited the number of cruisers in the British and American navies to about 40, depending upon the tonnage of each cruiser. The British delegation demanded 70 cruisers on account of the length of the sea communications of the Empire. The American delegation declared, however, that the naval needs of any power were relative; they depended upon the size of the navies of other countries. The British view of absolute requirements would in their opinion defeat the possibility of any agreement.

Result.—In the first plenary session, the British Government also proposed that the size of various types of ships as fixed in the Washington Treaty should be reduced and that their age before replacement should be extended. It declared that this would result in a saving of £50,000,000 to the British Government during the next ten years. The American Government stated that these matters were regulated, for the most part by the Washington Treaty. It finally agreed to a statement that the British proposals should be placed before the conference of the states

signatory to the Washington treaty, which shall meet in 1931.

On July 29, the British Government made a new proposal providing that the combined tonnage of cruisers, destroyers and submarines below the age-limit for replacement should not exceed 590,000 tons for the United States and Great Britain and 385,000 for Japan. In addition, each government might retain twenty-five per cent of the total tonnage in vessels over-age. The United States believed that the latter proposal would work to British advantage, since England's cruisers were comparatively new, while most of the American cruisers were built 20 years ago. On all of these points agreement proved impossible.

INTERNATIONAL RADIO CONFERENCE

The International Radio telegraphic Conference met at Washington, D. C., at the invitation of the United States between October 4, and November 25, 1927. Eighty governments were represented. As a result, an extremely complicated agreement was signed, 26,000 words in length, which was the result of the reports of 150 committees. The object of the convention is to prevent chaos arising out of the fact that there are only a limited number of channels or wave lengths for communications. The new Radio Convention divides these channels into groups; lanes are established across the sea which are devoted to specific types of service, all nations being free to engage in that special form of traffic upon these particular lanes.

INTERNATIONAL ECONOMIC CONFERENCE

Purpose of Conference.—Representatives of forty-six nations, including the United States, attended this important conference convened by the League of Nations for the purpose of investigating the economic causes of the present world maladjustment. The delegates, though named by their governments, were selected for their technical ability and not as political representatives. Although the Conference had no power to take official action on any of the problems out-

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lined in its agenda, it nevertheless was able to suggest a program of action which it is hoped will eventually lessen the danger of economic conflict.

Peace and Economic Policies.—The Conference dealt first with the world economic position. It passed an important resolution stating its unanimous conviction that the maintenance of world peace depends largely upon the principles on which the economic policies of nations are formed and executed; that the Governments and peoples of all countries should constantly take counsel together as to this aspect of the economic problem; and that the Conference should look forward to the establishment of a recognized body of principles designed to eliminate the economic difficulties which cause friction and misunderstanding.

Commerce.—The Conference then dealt with Commerce. Under this head, the question of customs tariff levels was discussed and the essential conclusion reached, that the time has come to put an end to the growth in customs tariffs and to attempt downward revision by an effort along the three following lines: firstly, by *individual* action by the various States with regard to their own tariffs; secondly, by *bilateral* action through the conclusion of suitable commercial treaties; thirdly, by *collective* action, by means of an inquiry undertaken by the Economic Organization of the League of Nations, with a view to encouraging the extension of international trade on an equitable basis by removing or lowering the barriers to international exchange set up by excessive customs tariffs.

Tariffs.—It was felt by the Conference that the question of customs tariffs, notwithstanding its fundamental importance in the economy of each State, has now come to be considered as no longer being exclusively within the domain of national sovereignty but as falling within the scope of problems for which parallel or concerted action among the different nations is possible and desirable.

Taxes.—The Conference condemned the practice of penalizing imported

goods by means of differential internal taxes; and declared that as the free movement of raw materials is essential for a healthy development of world trade, export taxes should be as low as fiscal requirements and exceptional and compelling circumstances permit, and should in any case not be discriminatory.

Industry and Agreements.—The next item on the agenda of the Conference was Industry. The Conference took as its central problem the question of how costs could be reduced without injury to the consumer or the worker. With this object it took under consideration three subjects: (1) "Rationalization" in its various aspects, and in this connection (2) International Industrial Agreements, and (3) the collection and exchange of information.

The question of industrial agreements was then discussed and while no conclusions were reached, the Conference recognized the growth of agreements as a development which may be either good or bad according to the spirit in which they are constituted and operated. It further laid down the principle that such agreements ought not to lead to an artificial rise in prices and that they should not restrict the supply to any particular country of raw materials or basic products, or without just cause, create unequal conditions between the finishing industries of consuming and producing countries or other countries similarly placed.

Agriculture.—For the first time at this Conference, agriculture was represented side by side with commerce and industry in such a way that it could take its place in a general review of the economic situation of the world.

Perhaps the most important outcome of the agricultural discussions was the realization of the essential interdependence of agriculture, industry and commerce; that "it would be in vain to hope that one could enjoy lasting prosperity independently of the others." The Conference advised the general adoption of better technical methods in agriculture, more scientific organization, and extension of the international campaign against

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diseases of plants and animals, by cooperation and the organization of credit institutions.

OTHER CONFERENCES

Other international conferences in which the United States participated follow: Conference of Health Experts on Infant Welfare—Second Session: Paris, Jan. 17-20; Advisory Commission on Traffic in Opium, January 17-February 3, 1927, September 28-October 8; Committee of Experts on Civil Aviation, Brussels, Feb. 7-12; Health Committee of the League of Nations, 9th Session, Geneva, Feb. 4-18; Special Committee on Private Manufacture of Arms, Geneva, March 14-17; Committee for the Progressive Codification of International Law, Geneva, March 22-April 2; International In-

stitute of Intellectual Cooperation, Governing Body, Geneva, July 22-26; Third General Conference on Communications and Transit, Geneva, August 23-September 2; Conference of Press Experts, Geneva, August 24-29; Conference on Import and Export Restrictions, Geneva, October 27-November 8; Pan American Conference of Jurists, Rio de Janeiro, April 17-May 21; Pan American Commercial Conference, Washington, May 2-19; Interamerican Conference on Civil Aviation, Washington, May 2-19; Second Pan American Conference on Uniformity of Specifications, May 9-11; Pan American Standardization Conference, Washington, May 9; Preparatory Commission on Disarmament, Geneva, March 21-April 26, Geneva, November 3-December 2.

AMERICA'S RELATIONS TO THE LEAGUE OF NATIONS AND WORLD COURT

BY ARTHUR SWEETSER

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GENERAL ATTITUDE OF THE UNITED STATES

American cooperation with the League of Nations, which began two or three years after the bitter 1920 political campaign, received accentuation during 1927, when President Coolidge called a Naval Conference at Geneva. The representatives of the Government accepted cordial relations with members of the League, and American organizations and individuals appeared prominently in non-official League activities.

"The League" issue as such, which developed unprecedented animosities in 1920, practically completed its slow fading from American preoccupation in 1927. The dread phrases "Super-State," "Destruction of sovereignty," "Sending American boys to Europe," ceased to affect the American public. The question of American membership did not, for the moment, arouse public discussion; the country was so extraordinarily prosperous as to be benevolent, while President Coolidge enjoyed such unequalled public confidence in his cau-

tion that any sense of danger from League-cooperation which might have remained over from 1920 could not find room for play. In the public mind the League was widely accepted as Europe's best expression for peace and cooperation, and consequently as deserving of such American collaboration as could be given without violating American tradition.

The international relations of the United States, therefore, followed a far more normal course than in the years just preceding. The Administration could base its judgment as to cooperation with League activities not so much with reference to opposition in the Senate as to the actual question of American interests. As new League activities arose one by one, the State Department found it increasingly to American advantage to associate itself with them and to develop a courteous, if necessarily limited system of cooperation.

American participation in international conferences accordingly developed far beyond previous years. The movement began in 1922 with cau-

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tious attendance at conferences on certain "humanitarian" activities such as opium and white slavery, and then widened into the "technical" or "non-political" fields, developed in 1927 to attendance at four of the five plenipotentiary conferences and many of the preparatory committees held by the League. A line was still drawn against "political" activities, though the distinction was rather hard to define when American delegates debated questions so fundamental to international action as armaments, economics, tariffs, and import and export restrictions.

This cooperation was effected not only with the silent acquiescence of, but even after actual consultation with, leading irreconcilables, who had fought the League violently a few years earlier. Hardly a voice of protest, of surprise, or even of remark was raised by friend or foe. The evolution of international cooperation seemed to be taken for granted, though its scope was certainly not realized. Either the public were otherwise occupied, or had complete confidence in the Administration, or saw nothing unnatural about limited American cooperation with an international cooperative association.

LIMITATIONS ON ACTION

Such cooperation was, however, far from being either complete or free. America was obviously inconvenienced by seeking to follow a lone course while the other nations were cooperating through a common agency. Inevitably the issue of relations with the League of Nations confronted us on occasion after occasion. A new method had come into world relationships which absorbed much of the interest and loyalty of the members and necessarily limited the initiative and international activity of the few non-members of the League who participated. On the one hand America received various invitations towards which the Administration felt certain inhibitions; on the other hand the United States could not itself originate proposals without considering issues only indirectly related. "Isolation" was shown to mean not only freedom of respon-

sibility, but also definite limitation of opportunity.

Clearly did this appear when America's offer to join the Permanent Court on conditions laid down by the Senate and the invitation to France and Italy to join in the Naval Conference were not accepted in the original terms by the other Powers, largely because of the implications to the League. The negotiations with France on arbitration and the outlawry of war were destined to meet the same difficulties. Similarly American delegates in such League Conferences as the United States attended felt a certain understandable, though unnecessary, hesitation; for the United States was still "outside," and its delegates, sometimes despite their personal views, were obliged by regard for the probable views of the Senate to oppose the natural suggestions of other nations to use the League mechanism for future action. Finally the United States, because of non-representation in the League's central agencies, was in the position not only of having no guarantee of invitations to important international meetings; but (as twice was very nearly the case in 1927), when invited, was authorized to participate only in the immediate technical discussions and not as to the terms on which the meeting was convened or in the execution of its decisions.

Most distinctly was this position shown in connection with the Assembly and the Council, in neither of which could an American delegate be present, either to state the American viewpoint or defend the American interest. Inasmuch as in both these bureaus matters deeply affecting all countries constantly arose, American interests were involved not only in general questions of the peace or co-operative world organization but, in particular, questions affecting work in which the United States participated or would participate, or specific American policies such as when, at the 1927 Assembly, the Panama delegate reported a dispute between his country and the United States, when the British and French Foreign Ministers stated their interpretation of President Coolidge's Naval Con-

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ference. Absence of the United States from such world meetings was not all advantageous.

DISARMAMENT

Within the special League activities during 1927, the United States was undoubtedly most prominent in connection with disarmament. The early policy which for years prevented American cooperation even in the limited question of the arms traffic gave way to full and positive membership on the Preparatory Commission for the Disarmament Conference. This Conference, while running its normal course throughout the year, resulted in the Spring in the convocation of a Naval Conference by President Coolidge, and in the Fall to refusal of the United States to participate in the Security and Arbitration Committee.

February 10, 1927, President Coolidge unexpectedly invited Great Britain, Japan, France and Italy to a Naval Conference at Geneva; which, throughout, was most scrupulously and courteously stated to be a part of and a contribution to the League's general disarmament work. The first two nations accepted fully; the latter two sent only "informers," partly on the ground that the Conference cut across the orderly process of League work. The Three-Power meeting which developed asked and was willingly accorded the courtesy of the use of the League building and equipment. The reasons for its failure lay in national policies outside League control. It is worth noting that the President of the United States is the only statesman who, on his own initiative, has convoked an international conference at the seat of the League.

Meanwhile the tripartite disarmament conference was proceeding slowly and unencouragingly. The Preparatory Commission met in March, when Ambassador Gibson headed a large American delegation of State Department, Army and Navy officials. As this session brought few results and the Naval Conference ended in disagreement, the September Assembly of the League of Nations gave a new turn to the discussion by instituting a Security and Arbi-

tration Committee, to change the emphasis of disarmament from a gun-by-gun reduction to the creation of a political calm and a system of peaceful settlement which would make excessive armaments fall of their own weight. At the December session of the Preparatory Commission, the head of the American delegation, Hugh R. Wilson, Minister at Berne, stated that, largely because of America's non-membership in the League, the United States, while anxious to follow the results of this new committee, could not form part of it.

ECONOMIC CONFERENCES

America's next most important cooperation with the League was in the economic sphere. The presence of several unofficial Americans the previous year as members of the Preparatory Committee for the Economic Conference and the very profound preparation made for that gathering, induced the Administration to ask Congress for authority and funds to name delegates representative of the whole sweep of American financial, economic, manufacturing, labor and agricultural interests. A very strong delegation was sent, consisting of Henry M. Robinson, formerly of the Dawes Committee; Norman H. Davis, former Under-Secretary of State; Julius Klein, Director of the Bureau of Foreign and Domestic Commerce of the Department of Commerce; John W. O'Leary, President of the United States Chamber of Commerce; and Alonzo E. Taylor, of Stanford University, together with over a score of Governmental experts from the State, Commerce and Treasury Departments. This delegation not only played a large part by the force of its membership and the fact that Mr. Robinson was a Vice-President and Mr. Davis rapporteur of the most important committee; but also for the attitude of the United States in this great experiment in international economic history.

Two other important plenipotentiary League Conferences were also attended by formal American delegations. The first was the General Conference on Communications and

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Transit to consider various ways of improving the general flow of trade throughout the world. The second was the Conference on Import and Export Restrictions developed during the war. Both American delegations were headed by the American Minister at Berne, Mr. Wilson, with representatives variously from the State and Commerce Departments and the Shipping Board.

Similarly, American experts were nominated by the Government for the first time to certain technical preparatory committees created by the League. Professor Thomas S. Adams, President of the American Economic Association, was named, with Commerce and Treasury Department experts, to the April meeting of Government experts, on double taxation. Two months later, W. H. Moran, Chief of the Secret Service, was named to the Committee on Counterfeit Coinage, \$30,000,000, face value, of which had been seized in the last three years. In October Carovigno Skentelbery of the Shipping Board was appointed to the Committee on Maritime Tonnage Measurement.

SOCIAL CONFERENCES

Previous contacts were also continued. Surgeon-General H. S. Cumming, of the Public Health Service, and Miss Grace Abbott, Head of the Children's Bureau of the Department of Labor, maintained their memberships respectively on the Health Committee and the Traffic in Women and Child Welfare Committee, though neither was able to go to Europe this year. Dr. Taliaferro Clark, Paris representative of the Public Health Service, attended two general conferences, one on Infant Welfare and the other on rabies. Dr. W. H. Davis, of the Census Bureau, attended the Committee on Statistics on Causes of Death. The plan of cooperation in regulation of the opium traffic, which had been so active in 1925 as to bring a large delegation under Congressional resolution to the League Committee, General Conference and Assembly, returned to the "observer" policy. Stanley Woodward, Vice-Consul at Geneva, attended the January session, and S.

Pinkney Tuck, Consul, at the September session.

INTERNATIONAL LAW CONFERENCES

During 1927, far more information than previously was transmitted by various Government Departments in assistance of the League's task of centralizing information and making preparatory studies. As regards international law, the State Department transmitted detailed views on certain phases of codification; and also forwarded all new American treaties for publication in the League's treaty series. As regards armaments, the War and Navy Departments transmitted complete American statistics for the League's *Armaments Year Book*. In finance, the Treasury Department supplied considerable information on double taxation and various agencies, and America's current financial and economic statistics. Similarly, the Bureau of Lighthouses transmitted a complete statement of the American system of buoyage and lighting of coasts. The Department of Agriculture sent a detailed explanation of the American road traffic system. The Department of Labor sent various reports on child welfare, the cinema and marriage laws. The Public Health Service furnished much epidemiological and special health data.

America's only refusal of cooperation (except for the Security and Arbitration Committee) was in connection with the plenipotentiary conference to draft a convention on an International Relief Union in case of calamities. The United States Government explained that in such cases it was the Red Cross which acted for the American people; and that organization, through T. B. Kittridge, informed the Conference that it was not only prepared to collaborate fully with the Union but had already prepared a statement of method.

QUESTION OF INTERNATIONAL COURTS

The one other official relationship which needs to be mentioned here was the complete inaction of Washington

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as regards the Permanent Court of International Justice, which the year before had created great agitation in the country, before the Senate finally ratified American membership with reservations. Following the "Conference of States, Members of the Court," called to consider these reservations, the United States Government received nearly forty answers to its proposal, a few accepting outright, but the majority accepting with counter reservations concerning the fifth American reservation on advisory opinions. These replies, though obviously intended to be but a step in negotiations, were interpreted in the United States almost gladly as definitely closing the issue. Word was given out that the American Government would take no further step to follow up its initiative.

UNOFFICIAL COOPERATION

American unofficial cooperation went even further than official. Various great American organizations and leading American citizens testified to the utility of League work either by personal or financial cooperation. Every invitation from the League to such private agencies was accepted; on the other hand, a number of spontaneous proposals were made to the League in this unofficial fashion.

The most spectacular event relating to the League from private agencies was John D. Rockefeller Jr.'s gift of \$2,000,000 for an International Research Library. This was offered in view of the unique advantages, and also necessities, of Geneva as an international center of fact and information. It was most gratefully accepted by the forty-nine nations present at the Assembly as a fitting adjunct to the newly authorized Assembly and Secretariat building.

PARTICIPATION IN COMMITTEES

Of other activities of the League affecting the United States the most far-reaching was the League's decision, after many years' inaction, to invite Americans to cooperate in its financial and economic committees; and the consequent complete integration of American interests into this

important work. The helpfulness of unofficial Americans before and during the Economic Conference led to authorization to name Americans to both the small, semi-official Economic Committee and the larger, more general Consultative Committee. Similarly the importance of American finance and the fact that about one-fifth of the \$350,000,000 raised in League loans has been floated through New York, led to the appointment to the Financial Committee of Jeremiah Smith Jr. of Boston, who had done exceptional work as High Commissioner for the League's \$50,000,000 Hungarian Reconstruction Plan.

In connection with the Hungarian finances, Royal Tyler of Quincy, Mass., continued in Budapest as League agent. Similarly, Charles B. Eddy served throughout the year as Chairman of the Greek Refugee Settlement Commission, which was originally started at American suggestion with a League Loan of \$50,000,000, and which led this year to a further loan of \$45,000,000, and, incidentally to the funding of the Greek war debt to the United States. Nelson Jay continued as trustee for the Austrian Loan; Benjamin W. Conner, President of the American Chamber of Commerce in Paris, served on the Committee on Execution of Foreign Arbitral Awards; Washington Irving Bullard and Basil Miles represented the International Chamber of Commerce at the Import and Export Restrictions Conference; and Americans were present unofficially at the Economic Conference, including Roland W. Boyden, representing the International Chamber of Commerce.

PRESS CONFERENCE

Next most striking of American unofficial cooperation was the presence at the Press Conference of what was probably the most powerful group of American news representatives ever assembled. Instead of avoiding such an international conference because of possible political implications, the American journalists not only appreciated its potentialities but participated very actively in its proceedings. The Associated Press was represented by its General Manager, Kent

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Cooper; the United Press by its President, Karl A. Bickell; the International News by its President, M. Koenigsberg; the Scripps-Howard Newspapers by their President, Robert P. Scripps, and the New York Times by its Foreign Editor, Frederick T. Birchall; all of them accompanied by other leading men in their organizations.

INTERNATIONAL LAW COMMITTEES

In older and often long-continued work unofficial America maintained and, in some cases, strengthened its cooperation. In the field of International Law, John Bassett Moore, former Councillor of the State Department, completed his sixth year as judge of the Permanent Court; George W. Wickersham, former Attorney-General, continued on the Committee for the Progressive Codification of International Law. Another activity which drew near to completion was the international investigation regarding legal assistance to the poor, to the expenses of which the American National Committee on Legal Aid Work contributed \$8,500.

SOCIAL COMMITTEES

In the field of International Health, the Rockefeller Foundation continued its grants, which now run to over \$125,000 a year, and make possible a world-wide system of interchange of Public Health officials, monthly publication of a universal epidemiological intelligence and creation of an important Health Centre at Singapore. In the same field, Dr. C. E. A. Winslow, President of the American Public Health Association, and Dr. Alice Hamilton, of Harvard, served on the Health Committee. As regards the Traffic in Women, Colonel William F. Snow and Major Bascom Johnson, as

President and Chief Investigator respectively of the League Committee, completed and finally reported to the Council an exhaustive international enquiry, to the expenses of which the American Social Hygiene Association contributed \$75,000. The enquiry into opium production in Persia presided over by Frederic A. Delano and financed to the extent of \$30,000 by the Bureau of Social Hygiene was similarly completed and reported upon to the Council during the year; as a result an offer was made by Persia, through another American, Colonel Daniel W. MacCormick, who represented that country before the Council, to reduce production 10% a year for three years. Colonel Arthur Woods made an important proposal for drugs control, in his capacity of assessor on the Opium Committee. A number of Americans, headed by Professor Robert A. Millikan of the California Technical Institute, took part in the work of intellectual cooperation. Probably a dozen American medical men participated in various League exchanges and studies. H. F. Guggenheim, President of the Daniel Guggenheim Fund for the Promotion of Aeronautics, served on the committee of experts on civil aviation.

PRESENT ATTITUDES

American cooperation with the League of Nations during 1927, both officially and unofficially, therefore, has developed far beyond previous years and has covered a wide field of interest. The United States Government has preferred, however, to remain a non-member of the League, without a voice in the central agencies and with participation entirely a matter of courtesy rather than of right.

THE INSTITUTE OF POLITICS

By WALTER WALLACE McLAREN

EXECUTIVE SECRETARY, INSTITUTE OF POLITICS, WILLIAMSTOWN

The general condition of world affairs is perhaps calmer than it has been in the past. We seem to be entering upon a post-postwar era. Questions which have been agitating the public mind and exciting appre-

hension do not loom so large nor look so menacing. It is now certain that there will be no large or formal revision of the treaties of peace, whatever modifications may take place piecemeal and quietly. It is clear that Germany is recovering both economically and politically, and will probably undergo neither further revolution nor a restoration. It is obvious that the Soviet régime in Russia is firmly established, but it is equally obvious that it is not likely to achieve world revolution. It merely remains for the other nations to find a *modus vivendi* with an unreliable but not dangerous government.

The disruptive force of the theory of self-determination seems to be exhausted, with the result that the integrity of the British Empire, seriously threatened in Ireland, Egypt, South Africa, and India, seems now assured, while the probabilities of Filipino independence appear very remote. It is true that China remains unsettled, but despite that fact it is gradually becoming clear that Chinese Nationalism is not a form of Bolshevism, and that there is to be no active intervention in the Chinese civil war by outside powers. The trouble may be regarded as successfully localized for the present. In regard to the United States, the question of American membership in the League of Nations in any predictable period of time is dead. On the other hand, the existence of the League is no longer in doubt. It is continually becoming a more effective part of the World political system. And finally it is highly probable that no amount of complaint will persuade the Washington government to reopen the debt question.

Seventh Session.—These things being so, it becomes possible to take a retrospective view of the events since the war with some objectivity and the seventh session of the Institute of Politics at Williamstown, Mass., in August last aimed, in considerable measure, to do this. The hysteria engendered by the war has largely subsided. Certain series of events have run their course. It is time to look back, to take account of stock, to attempt to determine the direction in

which the world is now headed. What policies have the European powers been following since the war? How can the legal point of view of the continental peoples be better understood by Americans? Wherein has the British Empire been transformed, and what does it signify? Has Democracy, that panacea of the nineteenth century, failed, or are the present European dictatorships merely temporary and due to local peculiarities? In what ways may Filipino political discontent be abated, short of independence, and how can political education and economic development in the islands be best advanced? What are the conditions in Latin America and China, and how are American interests involved?

America a World Power.—Careful thought on these matters is particularly necessary for Americans, since it has become certain that the United States must function as a World power whether it wishes to or not. It is essential, therefore, that Americans put their minds to the problem of how to deal intelligently and quickly with international affairs. As one of the World's greatest producers we cannot, for mere business reasons if for no others, neglect matters which affect our relation to a world market. Recent exploits in aviation have demonstrated our closeness to Europe. The ills of the American farmer are not due only to a local situation, but to conditions of world economics. Such being the case, the study of contemporary proposals for the formulation of an agricultural policy and an investigation of the economic consequences of the existing debt policy is peculiarly appropriate.

Lectures and Addresses.—The following courses of lectures were given: "Financial and Economic Policy of Germany Since the War," by Dr. Peter Reinhold, who was formerly Saxon Minister of Finance, and formerly Finance Minister in the Luther Cabinet in the German Reich; "Foreign Policies of Europe Since the Peace of Versailles," by Count Carlo Sforza, member of the Italian Senate, formerly Minister to China, Italian High Commissioner to Turkey, and Minister for Foreign Affairs in

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1920; "British Foreign Policy Since the War," by Sir Arthur Willert, head of the news department in the British Foreign Office.

In addition to the courses of lectures, several addresses were delivered by visitors of international reputation, including Dr. Jacob Lange, the Danish authority on agriculture, Dr. Robert Michels, Professor of Political Economy at the University of Basel, Switzerland, Bishop Nicolai of Ochrida, Serbia, and Mr. Moises Saenz, Mexican Under-Secretary of Education.

Round Tables.—The following is a list of the Round-Table subjects with their respective leaders: "International Debts in Retrospect and Prospect," Dr. Joseph S. Davis, of the Food Research Institute, Stanford

University; "The Philippine Islands: Their Political Status," Professor Ralston Hayden, University of Michigan; "Present Problems of the British Commonwealth of Nations Since the War," Professor Herbert Heaton, Queens University; "Main Contrasts between the Anglo-Saxon and the Continental Systems of Law," Dr. Pierre LePaulle, Paris, France; "The Chinese Situation," Professor Harold S. Quigley, University of Minnesota; "Foreign Interests and National Self-Determination in Latin America," Professor William R. Shepherd, Columbia University; "Dictatorship versus Democracy in Europe," Professor Harold R. Spencer, Ohio State University; "An American Agricultural Policy," Mr. Henry A. Wallace of Des Moines, Iowa.

COGNATE SOCIETIES

ACADEMY OF POLITICAL SCIENCE IN THE CITY OF NEW YORK.—Kent Hall, Columbia University, New York, N. Y.

AMERICAN PEACE AWARD.—565 Fifth Ave., New York, N. Y.

AMERICAN SOCIETY OF INTERNATIONAL LAW.—2 Jackson Place, Washington, D. C.

ARBITRATION SOCIETY OF AMERICA, INC.—115 Broadway, New York, N. Y.

CARNEGIE ENDOWMENT FOR INTERNATIONAL PEACE.—2 Jackson Place, Washington, D. C.

COUNCIL OF ARBITRATION.—342 Madison Ave., New York, N. Y.

EMERGENCY FOREIGN POLICY CONFERENCE.—1414 Monadnock Block, Chicago, Ill.

FELLOWSHIP OF YOUTH FOR PEACE.—Bible House, New York, N. Y.

FOREIGN POLICY ASSOCIATION.—9 E. 45th St., New York, N. Y.

INTERNATIONAL LAW FOUNDATION.—165 Broadway, New York, N. Y.

INTERNATIONAL REFORM FEDERATION.—206 Pennsylvania Ave. S. E., Washington, D. C.

LEAGUE OF NATIONS NON-PARTISAN ASSOCIATION.—6 E. 39th St., New York, N. Y.

LEAGUE OF NATIONS UNION.—70 Fifth Ave., New York, N. Y.

NATIONAL COUNCIL FOR PREVENTION OF WAR.—532 17th St., N. W., Washington, D. C.

NATIONAL COUNCIL OF FOREIGN SERVICE TRAINING.—U. S. Bureau of Education, Washington, D. C.

PEOPLE'S RECONSTRUCTION LEAGUE.—35 B. St., N. W., Washington, D. C.

WOMEN'S INTERNATIONAL LEAGUE FOR PEACE AND FREEDOM.—70 Fifth Ave., New York, N. Y.

WOMEN'S PEACE SOCIETY.—20 Vesey St., New York, N. Y.

WOMAN'S PEACE UNION.—180 Lexington Ave., New York, N. Y.

WORLD PEACE FOUNDATION.—40 Mt. Vernon St., Boston, Mass.

(INTERNATIONAL) REGIONAL

ARMENIA-AMERICA SOCIETY.—289 Fourth Ave., New York, N. Y.

AMERICAN COMMITTEE FOR ARMENIAN INDEPENDENCE.—1 Madison Ave., New York, N. Y.

AMERICAN ASIATIC ASSOCIATION.—461 Eighth Ave., New York, N. Y.

CHINA SOCIETY OF AMERICA.—19 W. 44th St., New York, N. Y.

COMMITTEE ON COOPERATION IN LATIN AMERICA.—25 Madison Ave., New York, N. Y.

ENGLISH-SPEAKING UNION OF THE U. S.—19 West 44th St., New York, N. Y.

COGNATE SOCIETIES

FAR EAST CONFERENCE.—17 Battery Place, New York, N. Y.	NATIONAL ASSOCIATION FOR PROTECTION OF AMERICAN RIGHTS IN MEXICO.—17 Battery Place, New York, N. Y.
FRENCH INSTITUTE OF THE UNITED STATES.—20 E. 60th St., New York, N. Y.	PAN-AMERICAN SOCIETY OF THE UNITED STATES, INC.—89 Broad St., New York, N. Y.
FRIENDS OF BELGIUM.—32 Broadway, New York, N. Y.	PAN-PACIFIC UNION.—Honolulu, T. H.
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PART TWO

AMERICAN GOVERNMENT

DIVISION III

THE NATIONAL GOVERNMENT

CONGRESSIONAL RULES AND COMMITTEES

BY MILTON CONOVER

PROFESSOR, YALE UNIVERSITY

Changes In Rules.—Although there were virtually no changes in the rules of either the Senate or of the House of Representatives during the Second Session of the Sixty-ninth Congress, the opening weeks of the Seventieth Congress in December, 1927, witnessed some significant alterations in the Rules pertaining to Committees in both Houses. Otherwise, the rules of the Sixty-ninth Congress, in general, were adopted by the Seventieth Congress.

Senate Rule XXV was amended so as to increase the size of membership in certain committees. Consequently, the largest one, that on Finance, was made to consist of twenty members; while the membership of the committees on Commerce and on Interstate Commerce was increased to nineteen each. Thus the range in size of Senate Committees was made to extend from three to twenty members, the smallest one being the Select Committee on Revision of the Law.

House Committees.—In the House of Representatives the abolition and reconstruction of committees were fundamental. Sixteen committees were abolished, some of which were more than a century old. These included the eleven committees on public expenditures in the executive departments, the first three of which

had been established in 1816, the other eight being created as the newer cabinet departments were established. In place of these eleven committees, there was created one Committee on Expenditures in the Executive Departments, consisting of twenty-one members. It was endowed with the jurisdiction, and charged with the work of the former eleven committees; and, it was planned that it should cooperate with the Appropriations Committee—in accordance with proposals that had been introduced in the preceding Congress (see *AMERICAN YEAR BOOK*, 1926, p. 121).

Five committees were abolished without replacements;—the Committee on Railways and Canals which was established in 1831 but which practically had lost its jurisdiction pertaining to railways; the Committee on Mileage, created in 1837, but which did not actually report appropriations and ordinarily did not report any legislative propositions; the Committee on Alcoholic Liquor Traffic, constructed in 1893; the Committee on Industrial Arts and Expositions, formed in 1901 with "jurisdiction of all matters referring to the Louisiana Purchase and to proposed expositions"; and, the Committee on Woman Suffrage, which was founded in 1917 and reported legislation for the Nineteenth Amendment.

CONGRESSIONAL LEADERS

Of the forty-six committees that remained, the membership of twelve of them was increased to twenty-one, while the size of the Committees on the Judiciary and on Interstate and Foreign Commerce was increased to twenty-three members.

Committee Readjustments.—In effecting these changes in the House of Representatives, according to Chairman Bertrand H. Snell of the Rules Committee, there were eliminated 129 committee assignments—seventeen of which had not been filled during the Sixty-ninth Congress. In lieu of these eliminations, there were created eighty-six assignments on bona fide committees that actively function in Congressional business. "Therefore," said Mr. Snell, "every Member who receives assignment under the present plan will be assigned to a committee that has something to do with the every day work and progress of the House. Further, of the Members who are affected by this elimination of assignments, 54 had over four or

more committee assignments and there were 79 Members in the last Congress who had over four assignments."

He believed these readjustments would "tend toward more efficient work in the House, and certainly the new Members should be very much interested in this change, because it assures every one of them being appointed on some committee that has real, definite work to do," whereas the Congress had been carrying fifteen committees from year to year that had had "practically no work to do in connection with the work of the House" and had been "used simply to furnish assignments to Members" as the majority of the abolished committees had not even met for several years.

Resolutions were presented to provide House committees on Aeronautics; and, on Communications, Radio, and Broadcasting. But as late as January 10, 1928, they had not been established.

CONGRESSIONAL LEADERS

BY MILTON CONOVER

PROFESSOR, YALE UNIVERSITY

Effect of Committee Changes.—Soon after the Seventieth Congress commenced on December 5, 1927, the leadership in both Houses, in great measure, was assigned to committees and its responsibility was re-fixed to a great degree by the changes in the rules. This was quite effective in the Senate as well as in the House of Representatives. The enlargement of the Senate Committees, however, provided places for eighty-four of the ninety-four Senators who were eligible—two senators-elect not being admitted at the time. Of these eighty-four Senators, all but two were assigned to more than one of the thirty-four committees. No Senator, however, was elected to more than six committees and only nine gentlemen served simultaneously on that number. Six of these nine committee members represented Western States, thus counterbalancing, somewhat,

Pennsylvania's strong committee representation in the House. They were Senators Mayfield of Texas, Ashurst of Arizona, King of Utah, Pittman of Nevada, Walsh of Montana, and Dill of Washington.

Eastern Senators serving on the maximum number of committees were Senators Dale of Vermont, Metcalf of Rhode Island, and Reed of Pennsylvania. With the exception of Pennsylvania, it is noted that these assignments provide additional instances of Senators from the States of lesser population being appointed to positions of great national importance. It is supposed that this, in part at least, may be due to the fact that they have fewer local matters to distract their attention from the national problems. Thus, again, are some of the Western States compensated in part, for their long distance from Washington and for the widely

III. THE NATIONAL GOVERNMENT

scattered distribution of their population—factors which render them less powerful as States in the House of Representatives.

Committee Leadership In Senate.

—The small number of Senate Committees and the selection of certain Senators for the chairmanship of more than one committee, concentrated the leadership and responsibility for action in the Seventieth Congress. Senator Francis E. Warren of Wyoming, however, was the only gentleman holding the chairmanship of as many as three committees, those being the Committees on Appropriations, on Military Affairs, and on Public Buildings and Grounds. Leaders serving as chairman of two committees were Senator Charles L. McNary of Oregon who administered the work of the Committee on Manufacturers as well as that of the Committee on Agriculture and Forestry, in which he previously had advanced the McNary-Haugen Bill for Agricultural Relief; Senator Arthur Capper of Kansas, chairman of the Committees on Claims and on the District of Columbia; Senator Charles Curtis also of Kansas, who conducted the Committees on Rules and on Indian Affairs; Senator James E. Watson of Indiana, leader of the Interstate Commerce Committee and of the Committee on Privileges and Elections; and Senator Reed Smoot of Utah, chairman of the Committees on Public Lands and Surveys and on Finance.

Chairmen of other important committees were Senator George P. McLean of Connecticut who directed the Committee on Banking and Currency; Senator Wesley L. Jones of Washington, who was chairman of the Committee on Commerce; Senator William E. Borah of Idaho, who was chairman of the Foreign Relations Committee; and Senator George H. Moses, who besides serving as chairman of the Committee on Post Offices and Post Roads was made President *pro tempore* of the Senate.

Speaker Longworth.—In the House of Representatives Congressman Nicholas Longworth, Republican, of Ohio, the Speaker of the House in the preceding Congress, was again

elected to the Speakership by a vote of 225 to 187 over Finis J. Garrett of Tennessee, the Democratic leader. Whereupon, he was sworn into the position that he considered to be "one of the great governmental offices of the world," that is "second in dignity and importance, together with power and influence upon the future of America, potentially at least, only to the Presidency itself," a position which he would rather hold than "any other office in the gift of the American people."

Garrett and Tilson.—Representative Garrett, who had served in the House twenty-two years, became Democratic floor leader for the third time. Congressman John Q. Tilson, likewise a native of Tennessee, who had served for sixteen years as a representative in Congress from Connecticut, again became the Republican floor leader. Thus, both sides of the aisle in the House, again choose native Tennesseans as their strategists.

Committee Distribution in House.

—The geographical distribution of the forty-six House committee chairmanships of the Seventieth Congress favored Pennsylvania with nine chairmanships; New York with five; Iowa with four; Massachusetts with three; and, Illinois, Indiana, Kansas, Ohio, New Jersey and South Dakota each with two; while thirteen other states acquired one each: California, Connecticut, Idaho, Kentucky, Maine, Maryland, Michigan, Minnesota, Montana, New Hampshire, Oregon, Utah and Washington. Consequently, nearly one half of these chairmanships were maintained by representatives of this Eastern group of contiguous states: Pennsylvania, New Jersey, New York, Connecticut, and Massachusetts.

Pennsylvania Representation.—The nine committees whose chairmen were Pennsylvanians were all important, being those on Banking and Currency, Enrolled Bills, Foreign Affairs, Insular Affairs, Judiciary, Military Affairs, Post Offices and Post Roads, and on Printing. Four of these positions were held by Pennsylvania representatives in the Sixty-ninth Congress when members from

MEMBERS OF THE SENATE

this Commonwealth held thirteen House committees chairmanships. Besides the chairmen, there were many other representatives from this state assigned to important committees—a situation which according to Representative Finis J. Garrett apparently rendered it something of a problem to have considered, by a thoroughly neutral committee, his own resolution to investigate the membership qualifications of James M. Beck, recently resident of Pennsylvania. "Let me ask," he rather pertinently interjected, "is it going to be possible to find one major committee of this House on which a Pennsylvanian will not have to go?"

New York Representation.—New York's committee leadership included the chairmanship of the committees on Accounts, Education, Interstate and Foreign Commerce, Rivers and Harbors, and on Rules. The three chairmanships held by gentlemen from Massachusetts were those of the committees on Claims, Elections No. 3, and on the Library, the chairman of the latter being the author of

treatises on the science of legislation, Robert Luce.

Iowa Representation.—Iowa was the most favored of all of the Western States in the matter of House committee chairmanships, winning four busy ones: that of the very important Committee on Ways and Means of which Representative William R. Green was designated as the leader; and, that on Agriculture of which Representative Gilbert N. Haugen was made chairman and on which he had acquired note in the Sixty-ninth Congress as the collaborator of the McNary-Haugen Bill. The other two committees directed by Iowa congressmen were those on Labor and on Roads.

Presidential Aspirants.—Such leadership in the Senate and the House of the Seventieth Congress ushered a number of congressmen into consideration for nomination for the Presidency and for the Vice-Presidency in 1928; and, as Senator Moses is alleged to have indicated, there were ninety-six candidates in the Senate alone.

MEMBERS OF THE SENATE

Compiled from the Congressional Directory, Year 1927

Dates show beginning of service in the Senate. Names of Republicans are in Roman type; those of Democrats in *Italic*; Farmer-Labor in ROMAN CAPS.

ALABAMA

J. Thomas Heflin (1920).
Hubbo L. Black (1926).

ARIZONA

Henry F. Ashurst (1912).
Carl Hayden (1927).

ARKANSAS

Joseph T. Robinson (1913).
T. H. Caraway (1921).

CALIFORNIA

Hiram W. Johnson (1917).
Samuel M. Shortridge (1921).

COLORADO

Lawrence C. Phipps (1919).
Charles W. Waterman (1926).

CONNECTICUT

George P. McLean (1911)
Hiram Bingham (1924).

DELAWARE

Thomas F. Bayard (1922).
Coleman du Pont (1925).

FLORIDA

Duncan U. Fletcher (1909).
Park Trammell (1917).

GEORGIA

William J. Harris (1919).
Walter F. George (1922).

IDAHO

William E. Borah (1907).
Frank R. Gooding (1921).

ILLINOIS

Charles S. Deneen (1925).

INDIANA

James E. Watson (1916).
Arthur R. Robinson (1925).

IOWA

Smith W. Brookhart (1922).
Daniel F. Steck (1924).

KANSAS

Charles Curtis (1915).
Arthur Capper (1919).

KENTUCKY

Frederic M. Sackett (1925).
Alben W. Barkley (1927).

LOUISIANA

Joseph E. Ransdell (1913).
Edwin S. Broussard (1921).

MAINE

Frederick Hale (1917).
Arthur R. Gould (1926).

MARYLAND

William Cabell Bruce (1923).
Millard E. Tydings (1923).

MASSACHUSETTS

Frederick H. Gillett (1925).
David Walsh (1926).

MICHIGAN

James Couzens (1922).
Woodbridge N. Ferris (1923).

MINNESOTA

HENRIK SHIPSTEAD (1923).
Thomas D. Schall (1925).

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MISSISSIPPI

Pat Harrison (1919).
Hubert D. Stephens (1923).

MISSOURI

James A. Reed (1911).
Harry B. Hawes (1926).

MONTANA

Thomas J. Welsh (1913).
Burton K. Wheeler (1923).

NEBRASKA

George W. Norris (1913).
Robert B. Howell (1923).

NEVADA

Key Pittman (1913).
Tasker L. Oddie (1921).

NEW HAMPSHIRE

George H. Moses (1918).
Henry W. Keyes (1919).

NEW JERSEY

Walter E. Edge (1919).
Edward I. Edwards (1923).

NEW MEXICO

Andrius A. Jones (1917).
Sam G. Bratton (1925).

NEW YORK

Royal S. Copeland (1923).
Robert F. Wagner (1926).

NORTH CAROLINA

Furnifold M. Simmons (1901).
Lee S. Overman (1903).

NORTH DAKOTA

Lynn F. Frazier (1923).
Gerald P. Nye (1925).

OHIO

Frank B. Willis (1921).
Simon D. Fess (1923).

OKLAHOMA

W. B. Pine (1925).
Elmer Thomas (1927).

OREGON

Charles L. McNary (1918).
Frederick Steiwer (1926).

PENNSYLVANIA

David A. Reed (1922).

RHODE ISLAND

Peter G. Gerry (1917).
Jesse H. Metcalf (1924).

SOUTH CAROLINA

Ellison D. Smith (1909).
Coleman L. Blease (1925).

SOUTH DAKOTA

Peter Norbeck (1921).
W. H. McMaster (1925).

TENNESSEE

Kenneth McKellar (1917).
Lawrence D. Tyson (1925).

TEXAS

Morris Sheppard (1913).
Earle B. Mayfield (1923).

UTAH

Reed Smoot (1903).
William H. King (1917).

VERMONT

Frank L. Greene (1923).
Porter H. Dale (1923).

VIRGINIA

Claude A. Swanson (1910).
Carter Glass (1920).

WASHINGTON

Wesley L. Jones (1909).
C. C. Dill (1923).

WEST VIRGINIA

M. M. Neely (1923).
Guy D. Goff (1925).

WISCONSIN

Robert M. La Follette, Jr.
(1925).
John J. Blaine (1926).

WYOMING

Francis E. Warren (1895).
John B. Kendrick (1917).

MEMBERS OF THE HOUSE OF REPRESENTATIVES

Compiled from the Congressional Directory, Year 1927

Republicans in Roman; Democrats in Italics; Farmer-Labor in ROMAN CAPS; Socialist in ITALIC CAPS.

Dates show the beginning of service in the House.

ALABAMA

1. *John McDuffie* (1919).
2. *Lister Hill* (1923).
3. *Henry B. Steagall* (1915).
4. *Lamar Jeffers* (1921).
5. *William B. Bowling* (1920).
6. *William B. Oliver* (1915).
7. *Miles C. Allgood* (1923).
8. *Edward B. Almon* (1915).
9. *George Huddleston* (1915).
10. *William B. Bankhead* (1917).

ARIZONA

At large—*Lewis W. Douglas* (1927).

ARKANSAS

1. *William J. Driver* (1921).
2. *William A. Oldfield* (1909).
3. *John N. Tillman* (1915).
4. *Otis Wingo* (1913).
5. *Heartsill Ragon* (1923).
6. *James B. Reed* (1923).
7. *Tilman B. Parks* (1921).

CALIFORNIA

1. *Clarence F. Lea* (1917).
2. *Harry L. Englebright* (1926).

3. *Charles F. Curry* (1913).
4. *Florence P. Kahn* (1925).
5. *Richard J. Welch* (1925).
6. *Albert E. Carter* (1925).
7. *Henry E. Barbour* (1919).
8. *Arthur M. Free* (1921).
9. *William E. Evans* (1926).
10. *Joe Crail* (1927).
11. *Philip D. Swing* (1921).

COLORADO

1. *S. Harrison White* (1927).
2. *Charles B. Timberlake* (1915).
3. *Guy U. Hardy* (1919).
4. *Edward T. Taylor* (1909).

CONNECTICUT

1. *E. Hart Fenn* (1921).
2. *Richard P. Freeman* (1915).
3. *John Q. Tilson* (1915).
4. *Schuyler Merritt* (1917).
5. *James P. Glynn* (1925).

DELAWARE

At large—*Robert G. Houston* (1925).

FLORIDA

1. *Herbert J. Drane* (1917).
2. *R. A. Green* (1925).
3. *Thomas A. Yon* (1927).
4. *William J. Sears* (1915).

GEORGIA

1. *Charles G. Edwards* (1925).
2. *E. E. Coz* (1925).
3. *Charles R. Crisp* (1913).
4. *William C. Wright* (1918).
5. *Leslie J. Steele* (1927).
6. *Samuel Rutherford* (1925).
7. *Malcolm C. Tarver* (1927).
8. *Charles H. Brand* (1917).
9. *Thomas M. Bell* (1905).
10. *Carl Vinson* (1914).
11. *William C. Lankford* (1919).
12. *William W. Larsen* (1917).

IDAHO

1. *Burton L. French* (1917).
2. *Addison T. Smith* (1913).

ILLINOIS

At large—*Richard Yates* (1919).
Henry R. Rathbone (1923).

MEMBERS OF THE HOUSE OF REPRESENTATIVES

1. Martin B. Madden (1905).
2. Morton D. Hull (1923).
3. Elliott W. Sproul (1921).
4. Thomas A. Doyle (1923).
5. Adolph J. Sabath (1907).
6. James T. Igou (1926).
7. M. Alfred Michaelson (1921).
8. Stanley H. Kunz (1921).
9. Fred A. Britten (1913).
10. Carl R. Chindblom (1919).
11. Frank R. Reid (1923).
12. John T. Buckbee (1926).
13. William R. Johnson (1925).
14. John C. Allen (1925).
15. Edward J. King (1915).
16. William E. Hull (1923).
17. Homer W. Hall (1927).
18. William P. Holaday (1923).
19. Charles Adkins (1925).
20. Henry T. Rainey (1923).
21. J. Earl Major (1926).
22. Ed. M. Irwin (1925).
23. William W. Arnold (1923).
24. Thomas S. Williams (1915).
25. Edward E. Denison (1915)

INDIANA

1. Harry E. Rowbottom (1925).
2. Arthur H. Greenwood (1923).
3. Frank Gardner (1923).
4. Harry C. Canfield (1923).
5. Noble J. Johnson (1925).
6. Richard N. Elliott (1917).
7. Ralph E. Updike, Sr. (1925).
8. Albert H. Vestal (1917).
9. Fred S. Purnell (1917).
10. William R. Wood (1915).
11. Albert R. Hall (1925).
12. David Hogg (1925).
13. Andrew J. Hickey (1919).

IOWA

1. William F. Kopp (1921).
2. F. D. Letts (1925).
3. T. J. B. Robinson (1923).
4. Gilbert N. Haugen (1899).
5. Cyrenus Cole (1921).
6. O. William Ramseyer (1915).
7. Cassius C. Dowell (1915).
8. Lloyd Thurston (1925).
9. William R. Green (1911).
10. L. J. Dickinson (1919).
11. William D. Boies (1919).

KANSAS

1. Daniel R. Anthony, Jr. (1907).
2. Ulysses S. Guyer (1926).
3. W. H. Sproul (1923).
4. Homer Hoch (1919).
5. James G. Strong (1919).
6. Hays B. White (1919).
7. Clifford R. Hope (1926).
8. William A. Ayres (1923).

KENTUCKY

1. William V. Gregory (1927).
2. David H. Kincheloe (1915).

3. John W. Moore (1925).
4. Henry De Haven Moorman (1927).
5. Maurice H. Thatcher (1923).
6. Orie S. Ware (1926).
7. Virgil Chapman (1925).
8. Ralph Gilbert (1921).
9. Fred M. Vinson (1924).
10. Katherine Langley (1927).
11. John M. Robsion (1919).

LOUISIANA

1. James O'Connor (1919).
2. J. Zach Spearing (1924).
3. Whitmell P. Martin (1915).
4. John N. Sandlin (1921).
5. Riley J. Wilson (1915).
6. Bolivar E. Kemp (1925).
7. Rene L. DeRouen (1927).
8. James B. Aswell (1913).

MAINE

1. Carroll L. Beedy (1921).
2. Wallace H. White, Jr. (1917).
3. John E. Nelson (1922).
4. Ira G. Hersey (1917).

MARYLAND

1. T. Alan Goldsborough (1921).
2. William P. Cole, Jr. (1927).
3. Vincent L. Palmisano (1927).
4. J. Charles Linthicum (1911).
5. Stephen W. Gambrill (1924).
6. Frederick N. Zihlman (1917).

MASSACHUSETTS

1. Allen T. Treadway (1913).
2. Henry L. Bowles (1925).
3. Frank H. Foss (1925).
4. George R. Stobbs (1925).
5. Edith Nourse Rogers (1925).
6. A. Piatt Andrew (1921).
7. William P. Connersy, Jr. (1923).
8. Frederick W. Dallinger (1927).
9. Charles L. Underhill (1921).
10. John J. Douglass (1925).
11. George Holden Tinkham (1915).

12. James A. Gallivan (1914).
13. Robert Luce (1919).
14. Louis A. Frothingham (1921).
15. Joseph W. Martin, Jr. (1925).
16. Charles L. Gifford (1922).

MICHIGAN

1. Robert H. Clancy (1927).
2. Earl C. Michener (1919).
3. Joseph L. Hooper (1925).
4. John C. Ketcham (1921).
5. Carl E. Mapes (1913).
6. Grant M. Hudson (1923).

7. Louis C. Cramton (1913).
8. Bird J. Vincent (1923).
9. James C. McLaughlin (1907).
10. Roy O. Woodruff (1921).
11. Frank P. Bohn (1926).
12. W. Frank James (1915).
13. Clarence J. McLeod (1923).

MINNESOTA

1. Allen J. Furlow (1925).
2. Frank Clague (1921).
3. August H. Andresen (1925).
4. Melvin J. Naas (1927).
5. Walter H. Newton (1919).
6. Harold Knutson (1917).
7. O. J. Kvale (1923).
8. WILLIAM L. CARSS (1925).
9. Conrad G. Selvig (1926).
10. Godfrey G. Goodwin (1925).

MISSISSIPPI

1. John E. Rankin (1921).
2. B. G. Lowrey (1921).
3. W. M. Whittington (1925).
4. Jeff Busby (1923).
5. Ross A. Collins (1921).
6. T. Webber Wilson (1923).
7. Percy E. Quin (1913).
8. James W. Collier (1909).

MISSOURI

1. M. A. Romjue (1923).
2. Ralph F. Lozier (1923).
3. Jacob L. Milligan (1923).
4. Charles L. Faust (1921).
5. George H. Combs (1927).
6. Clement C. Dickinson (1923).
7. Samuel C. Major (1923).
8. William L. Nelson (1925).
9. Clarence Cannon (1923).
10. Henry F. Niedringhaus (1927).
11. John J. Cochran (1927).
12. Leonidas C. Dyer (1917).
13. Clyde Williams (1927).
14. James F. Fulbright (1927).
15. Joe J. Manlove (1923).
16. Thomas L. Rubey (1923).

MONTANA

1. John M. Evans (1923).
2. Scott Leavitt (1923).

NEBRASKA

1. John H. Morehead (1923).
2. Willis G. Sears (1923).
3. Edgar Howard (1923).
4. John N. Norton (1926).
5. A. C. Shallenberger (1923).
6. Robert G. Simmons (1923).

NEVADA

- At large—Samuel S. Arentz (1925).

NEW HAMPSHIRE

1. Fletcher Hale (1925).
2. Edward H. Wason (1915).

III. THE NATIONAL GOVERNMENT

NEW JERSEY

1. Charles A. Wolverton (1926).
2. Isaac Bacharach (1915).
3. Harold G. Hoffman (1927).
4. Charles A. Eaton (1925).
5. Ernest R. Ackerman (1919).
6. Randolph Perkins (1921).
7. George N. Seger (1923).
8. Paul J. Moore (1926).
9. Franklin W. Fort (1925).
10. Frederick R. Lehlbach (1915).
11. Oscar L. Auf der Heide (1925).
12. Mary T. Norton (1925).

NEW MEXICO

At large—John Morrow (1923).

NEW YORK

1. Robert L. Bacon (1923).
2. John J. Kindred (1921).
3. George W. Lindsay (1923).
4. Thomas H. Cullen (1919).
5. Loring M. Black, Jr. (1923).
6. Andrew L. Somers (1925).
7. John F. Quayle (1923).
8. Patrick J. Carley (1927).
9. David J. O'Connell (1923).
10. Emanuel Celler (1923).
11. Anning S. Prall (1923).
12. Samuel Dickstein (1923).
13. Christopher D. Sullivan (1917).
14. William I. Sirovich (1927).
15. John J. Boylan (1923).
16. John J. O'Connor (1923).
17. William W. Cohen (1927).
18. John F. Carew (1913).
19. Sol Bloom (1923).
20. FIORILLO H. LA-GUARDIA (1922).
21. Royal H. Weller (1923).
22. Anthony J. Griffin (1917).
23. Frank Oliver (1923).
24. James M. Fitzpatrick (1926).
25. J. Mayhew Wainwright (1923).
26. Hamilton Fish, Jr. (1920).
27. Harcourt J. Pratt (1925).
28. Parker Corning (1923).
29. James S. Parker (1913).
30. Frank Crowther (1919).
31. Bertrand H. Snell (1915).
32. Thaddeus C. Sweet (1923).
33. Frederick M. Davenport (1925).
34. John D. Clarke (1921).
35. Clarence E. Hancock (1927).
36. John Taber (1923).
37. Gale H. Stalker (1923).
38. Meyer Jacobstein (1923).
39. Archie D. Sanders (1917).
40. S. Wallace Dempsey (1915).

41. Clarence MacGregor (1919).
42. James M. Mead (1919).
43. Daniel A. Reed (1919).

NORTH CAROLINA

1. Lindsay Warren (1925).
2. John H. Kerr (1923).
3. Charles L. Abernethy (1922).
4. Edward W. Pou (1901).
5. Charles M. Stedman (1911).
6. Homer L. Lyon (1921).
7. William C. Hammer (1921).
8. Robert L. Doughton (1911).
9. A. L. Bulwinkle (1921).
10. Zebulon Weaver (1919).

NORTH DAKOTA

1. Olger B. Burtness (1921).
2. Thomas Hall (1924).
3. James H. Sinclair (1919).

OHIO

1. Nicholas Longworth (1915).
2. Charles Tatgenhorst, Jr. (1927).
3. Roy G. Fitzgerald (1921).
4. W. T. Fitzgerald (1925).
5. Charles J. Thompson (1919).
6. Charles C. Kearns (1915).
7. Charles Brand (1923).
8. Brooks Fletcher (1925).
9. W. W. Chalmers (1925).
10. Thomas A. Jenkins (1925).
11. Mell G. Underwood (1923).
12. John C. Speaks (1921).
13. James T. Begg (1919).
14. Martin L. Davey (1923).
15. C. Ellis Moore (1919).
16. John M. Sweeney (1923).
17. W. M. Morgan (1921).
18. Frank Murphy (1919).
19. John G. Cooper (1915).
20. Charles A. Mooney (1923).
21. Robert Crosser (1923).
22. Theodore E. Burton (1921).

OKLAHOMA

1. E. B. Howard (1923).
2. William W. Hastings (1923).
3. Wilburn Cartwright (1927).
4. Tom D. McKeown (1923).
5. F. B. Swank (1921).
6. Jed Johnson (1926).
7. James V. McClintic (1915).
8. M. C. Garber (1923).

OREGON

1. Willis C. Hawley (1907).
2. Nicholas J. Sinnott (1913).
3. Franklin F. Korell (1927).

PENNSYLVANIA

1. James M. Beck (1927).
2. George S. Graham (1913).

3. Harry C. Ransley (1920).
4. Benjamin M. Golder (1925).

5. James J. Connolly (1921).
6. George A. Welsh (1923).
7. George P. Darrow (1915).
8. Thomas S. Butler (1897).
9. Henry W. Watson (1915).
10. W. W. Grist (1909).
11. Laurence H. Watres (1923).
12. John J. Casey (1927).
13. Cyrus M. Palmer (1926).
14. Robert G. Bushong (1927).
15. Louis T. McFadden (1915).
16. Edgar R. Kiess (1913).
17. Frederick W. Magrady (1925).
18. Edward M. Beers (1923).
19. Isaac H. Douthick (1926).
20. J. Russell Leech (1927).
21. J. Banks Kurtz (1923).
22. Franklin Menges (1925).
23. J. Mitchell Chase (1927).
24. Samuel A. Kendall (1919).
25. Henry W. Temple (1915).
26. J. Howard Swick (1927).
27. Nathan L. Strong (1917).
28. Thomas C. Cochran (1926).
29. Milton W. Shreve (1919).
30. Everett Kent (1923).
31. Adam M. Wyant (1921).
32. Stephen G. Porter (1911).
33. Clyde Kelly (1917).
34. John M. Morin (1913).
35. Harry A. Estep (1927).
36. Guy E. Campbell (1917).

RHODE ISLAND

1. Clark Burdick (1919).
2. Richard S. Aldrich (1923).
3. Louis Monast (1927).

SOUTH CAROLINA

1. Thomas S. McMillan (1925).
2. Butler B. Hare (1925).
3. Fred H. Dominick (1917).
4. John J. McSwain (1921).
5. William F. Stevenson (1917).
6. Allard H. Gasque (1923).
7. Hampton P. Fulmer (1921).

SOUTH DAKOTA

1. Charles A. Christopherson (1919).
2. Royal C. Johnson (1915).
3. William Williamson (1921).

TENNESSEE

1. B. Carroll Reece (1921).
2. J. Will Taylor (1919).
3. S. D. McReynolds (1923).
4. Cordell Hull (1923).
5. Edwin L. Davis (1919).
6. Joseph W. Byrns (1909).
7. Edward E. Eslick (1925).
8. Gordon Browning (1923).

THE PRESIDENCY AND VICE-PRESIDENCY

9. *Finis J. Garrett* (1905).
10. *Hubert F. Fisher* (1917).

TEXAS

1. *Eugene Black* (1915).
2. *John C. Boz* (1919).
3. *Morgan G. Sanders* (1921).
4. *Sam Rayburn* (1913).
5. *Hatton W. Sumners* (1913).
6. *Luther A. Johnson* (1923).
7. *Clay Stone Briggs* (1919).
8. *Daniel E. Garrett* (1921).
9. *Joseph J. Mansfield* (1917).
10. *James P. Buchanan* (1913).
11. *Tom Connally* (1917).
12. *Fritz G. Lanham* (1919).
13. *Guinn Williams* (1922).
14. *Harry M. Wurzbach* (1921).
15. *John N. Garner* (1903).
16. *C. B. Hudspeth* (1919).
17. *Thomas L. Blanton* (1917).
18. *Marvin Jones* (1917).

UTAH

1. *Don B. Colton* (1921).
2. *Elmer O. Leatherwood* (1921).

VERMONT

1. *Elbert S. Brigham* (1925).
2. *Ernest W. Gibson* (1923).

VIRGINIA

1. *Schuyler Otis Bland* (1918).
2. *Joseph T. Deal* (1921).
3. *Andrew J. Montague* (1913).
4. *Patrick H. Drewry* (1920).
5. *Joseph Whitehead* (1925).
6. *Clifton A. Woodrum* (1923).
7. *Thomas W. Harrison* (1923).
8. *R. Walton Moore* (1919).
9. *George C. Peery* (1923).
10. *Henry St. George Tucker* (1922).

WASHINGTON

1. *John F. Miller* (1917).
2. *Lindley H. Hadley* (1915).
3. *Albert Johnson* (1913).
4. *John W. Sumners* (1919).
5. *Samuel B. Hill* (1923).

WEST VIRGINIA

1. *Carl G. Bachmann* (1925).
2. *Frank L. Bowman* (1925).
3. *William Smithe O'Brien* (1927).
4. *James A. Hughes* (1927).
5. *James French Strother* (1925).
6. *Edward T. England* (1926).

WISCONSIN

1. *Henry Allen Cooper* (1921).
2. *Charles A. Kading* (1927).
3. *John M. Nelson* (1921).
4. *John C. Schafer* (1923).
5. *VICTOR L. BERGER* (1923).
6. *Florian Lampert* (1918).
7. *J. D. Beck* (1921).
8. *Edward E. Browne* (1913).
9. *George J. Schneider* (1923).
10. *James A. Frear* (1913).
11. *Hubert H. Peavey* (1923).

WYOMING

At large—*Charles E. Winter* (1923).

ALASKA

Dan A. Sutherland (1921).

HAWAII

Victor S. K. Houston (1927).

PHILIPPINES

Isauro Gabaldon (1920).
Pedro Guevara (1923).

PORTO RICO

Felix Cordova Davila (1917).

CLASSIFICATION

SENATE

Republicans	48
Democrats	47
Farmer-Labor	1
Total.....	96

HOUSE

Republicans	237
Democrats	195
Farmer-Labor	2
Socialist	1
Total.....	435

THE PRESIDENCY AND VICE-PRESIDENCY

By JAMES A. WOODBURN

PROFESSOR, UNIVERSITY OF MICHIGAN

PRESIDENT COOLIDGE

Third Term Question.—As the year 1927 opened President Coolidge seemed to be the outstanding candidate. The party organization was ready to accept his candidacy. Patronage and prestige were behind him. He had the support of the bulk of the newspapers and of the business and banking interests. The times were quiet; there was little occasion for a positive policy; and for such times Mr. Coolidge seemed to be the ideal president.

Still, the third term tradition and the agrarian revolt in the West were against the Coolidge candidacy. Certain Democratic and insurgent Republican leaders threatened to offer in Congress a concurrent resolution in opposition to a third term for any president. Senator Norris, of Nebraska, early in May came out positively against the nomination of Coolidge for a third term. Then on August 2 (fourth anniversary of his taking office as President) at Rapid City, S. D., he handed to each of the

newspaper correspondents attending him a slip of paper with these words: "I do not choose to run for President in 1928." The word "choose" was to become notorious in the political history of the year. Most people were ready to take the President at his word, that he had taken himself out of the running. There was some talk of "drafting" the President for a "second elective term"; of allowing the country to "choose" and leave to the President only the acceptance of the inevitable. Near the close of the year, the President (December 6) in a speech before the members of the Republican National Committee at the White House, informed his party and the country that he regarded himself as "eliminated" from the campaign of 1928; that his "decision would be respected," and he advised his party to set itself seriously to the task of selecting another candidate.

Vacation in the Black Hills.—Late in June the President went to the Black Hills, in South Dakota, for his summer vacation. Presumably he fixed the "Summer White House" in the corn belt with a view to acquiring some personal insight into farm problems. He thoroughly enjoyed the semi-frontier life. He and his family visited the Yellowstone Park before returning to Washington. He was accompanied on his vacation by an entourage of photographers and correspondents, who "played him up" in many forms. He was photographed in a cowboy stunt, with chaps and leggings and a ten-gallon hat.

The President and the Press.—In his bi-weekly interviews with the newspaper correspondents and other representatives of the press, President Coolidge ruled that the press representatives should not state in their reports what questions had been put to him or what queries he had refused to answer. The penalty for disregarding this ruling would be exclusion from the weekly interview. In a public address in New York early in May the President expressed the view that the newspapers ought not to criticize their Government in its conduct of foreign affairs. Since in America the press is free from

government interference and control, a failure to back the Government would strengthen the attitude of the governments with which we are negotiating. Mr. Coolidge seemed to identify the temporary Administration with the Government.

The Philippines.—The President let it be known that he was opposed to immediate Philippine independence. He vetoed a bill of the Philippine legislature for a plebiscite of Philippine voters on the question because, as he urged, it would "mean nothing and feed agitation." If they were independent they would have to pay for their own defense, their bonds would require a higher rate of interest, their products sent to the United States would have to pay ruinous tariff duties. Governor-General Leonard Wood died August 6. On December 13 Henry L. Stimson was appointed to the vacancy. He is acquainted with the situation in the Philippines from study of the political and racial situation on the ground.

Farm Relief: McNary-Haugen Bill.—Late in February, President Coolidge was confronted with an elaborate bill for farm relief, which was backed by the "farm bloc" and the organized agricultural interests. Notwithstanding pressure by mid-west Representatives in Congress, and by the American Farm Bureau Federation and other farm organizations, he vetoed the bill (February 25) objecting to the equalization fee, to price fixing, to sectional discrimination, and believing that the measure was unconstitutional.

The Inheritance Tax.—On the Federal estate tax, while hearings were going on before the House Ways and Means Committee, President Coolidge spoke of the advisability of repealing the tax. He looked to Secretary Mellon for the Government's fiscal policy.

International Peace.—On all plans for world peace the expressions from the White House were very cautious and guarded. The Coolidge non-committal and negative position was that the Government's chief desire should be so to conduct its foreign relations as to avoid any participation in con-

THE PRESIDENCY AND VICE-PRESIDENCY

troversies affecting other governments. The President was at first cool toward the Briand proposal for discarding war as "an instrument of public policy." In February Coolidge signed three bills, one carrying funds for the cruisers, one for elevation of guns, one for improvement of submarine bases. His real desire was to keep down naval expense in the hope of an international agreement for reduction of armaments. The Geneva Disarmament Conference which President Coolidge had called (participated in by Great Britain and Japan, refused by France and Italy) broke down in quarrels and quibbles over cruisers between naval experts who had no desire nor intention to reduce naval armaments.

Central American and Caribbean Policy.—At various times President Coolidge proclaimed as a corollary of the Monroe Doctrine a special interest in that region because of the Panama Canal and the Washington treaties (1922). In the course of the year the President sent American marines to Nicaragua who supported the Conservative government of one of the claimants for the presidency of the country.

The President defended his course in Nicaragua particularly on grounds that American investments and business interests needed protection; that our treaty right to build a canal through Nicaragua would be maintained. Later President Coolidge sent Henry L. Stimson as a personal observer in Nicaragua. He supported the American policy of safeguarding American property.

Mexico.—The strained relations (elsewhere discussed) with Mexico were much in the President's mind. The attitude of the Mexican government expressed in the Mexican constitution of 1917 was repellant to the President. He saw "no hope in arbitration" because there was "nothing to arbitrate" and there seemed to be a serious danger of a break in diplomatic relations between the two countries. Strong appeals came in from all parts of the country for arbitration, including one of the modern documents on public questions drawn up by a body of college professors.

President Coolidge showed patience and forbearance; and late in the year an opportune decision of the Government of Mexico, annulling the effect of the Mexican action on antecedent points, relieved the pressure. September 21 Dwight W. Morrow of the banking house of J. P. Morgan and Co. was appointed Ambassador to Mexico. After his arrival in Mexico the differences between the two countries were placed in a way toward fair and peaceful settlement. Col. Lindbergh's friendly non-stop airplane flight from Washington to Mexico in December, while not official, was hailed by the peoples of both countries as a harbinger of a better and friendlier feeling.

China.—Under authority of the President, through the Navy Department, marines and naval vessels were also sent to China to protect American nationals during the civil war in that country. But the President wished it understood that our forces were there not to control Chinese policies nor to take sides in the civil struggle, but only to protect American lives and property. This decision was not welcome to the desire of some American commercial interests in China. Still the Coolidge doctrine that the flag must follow the American whenever he goes, to protect him and his property, seemed to many "anti-imperialists" and "non-interventionists" as dangerous and sure to involve us in controversy.

The World Court.—A body of five hundred representative citizens in a joint document (December 10) urged upon President Coolidge the reopening of the question of America's adherence to the World Court. The President's reply was in favor of inaction; he believed that nothing could be accomplished by resuming negotiations.

The Annual Message.—In his annual message (Dec. 6), the President reviewed the prosperous condition of the country, "never before exceeded,"—wages high, employment plentiful, rates of interest reduced, savings and investments increased, and even the purchasing power of agriculture enhanced. Callable bonds have been refunded, the interest rate reduced,

III. THE NATIONAL GOVERNMENT

the public credit maintained, tax reduction made possible, the annual interest charge reduced by \$212,000,000. The President made a plea for constructive economy, "financial sacrifices and stern self denial in public expenditures," for the sake of steadily eliminating the public debt.

Tax Reduction.—"Debt reduction is tax reduction," neatly said the President. He held that tax reduction should be steered by those responsible for government financing. Unforeseen contingencies requiring money are always arising. Business depression may reduce the revenues and deplete the Treasury. The budget must be kept balanced, a deficit avoided. There should be no selfish pressure for the removal of fair taxes. If special interests are permitted to influence the withdrawal of their property from taxation, the tax laws would be unbalanced and unjust, bad for business, bad for the country, with disastrous financial consequences.

National Defense.—Though our military force requires twice the outlay of 1913 the President spoke of it as "moderate, adapted solely to defense." He urged a five-year program for the development of air forces and recommended better housing for the Army. He urged naval expansion "for the protection of the greatest treasure ever bestowed upon any people,"—more aircraft development, more merchant ships as an auxiliary to the Navy, more submarines and airplane carriers, and a material addition to the force of cruisers, though he disclaimed any desire for a race in competitive armaments. We should build cruisers without reference to other nations and "it should be demonstrated that propaganda will not cause us to change our course."

The Tariff.—President Coolidge presented the usual arguments for the protective tariff—maintenance of a high standard of wages and a domestic market for the farmer—while adducing figures to show that 65 per cent of our imports come in duty free, including everything used by the farmer. A material reduction of the tariff rates would mean, he said, "a general shrinkage of values, a de-

flation of prices, a reduction of wages, a general depression carrying our people down to the low standard of living in our competing countries."

Miscellaneous Topics.—The variety of subjects brought to the attention of the President is shown by the specific reservations embodied in the Annual Message. Among them are: Development of commercial aviation; a western hemisphere air mail; continuance of good road building at home and its encouragement among our neighbors; a parcels post for Cuba; a board of mediation and conciliation for the coal industry; legislation for petroleum conservation; adjudication of claims for the return of alien property taken in war-time; railroad consolidation for the sake of efficiency and for reduction of shipping costs; continued care of the war veterans by hospitals, insurance, compensation, and rehabilitation; continued encouragement and aid to the cause of education within the States including an Executive Department of Education and Relief. He advised the strengthening of the Farm Loan System; and the disposal of the Muscle Shoals power plant. The President spoke in praise of the progress of the negro race, and in emphatic disapproval of the "foul crime of lynching."

Agriculture.—Considerable space in the message was given to the discussion of agriculture in which the President called attention to marked improvement in farm conditions. Production is better balanced; there is no acute shortage nor heavy surplus; there is a reduction of costs, a rise in the level of farm prices, with a fall of prices in other lines, so that the purchasing power of the farmer is approaching normal. The only safe government plan is to assist the farmer to work out his own salvation; no plan will be of value which does not leave him standing on his own foundation. Government price fixing is known to be unsound and bound to result in disaster. Price fixing and subsidy would increase the surplus. "Putting the government directly into business is merely a combination of subsidy and price fixing aggravated by political pressure,

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leading logically to telling the farmer by law what and how much he should plant and where he should plant it, and what and how much he should sell and where he should sell it." The President suggested aid to the farmer in promoting cooperative marketing, and a revolving loan fund at a moderate rate for necessary financing. All of which indicated that the President had not changed in his opposition to the McNary-Haugen farm relief bill.

Flood Control.—The President described the calamitous conditions caused by the Mississippi flood disaster and the relief afforded by Red Cross and other agencies. Plans for future flood control must extend over many years. The reclaimed or protected land must bear a proportion of the cost of the extensive improvements. The President warned Congress and the country that this problem should be met by viewing it as a separate need without attempts to link it with other proposals for river control and expansion.

Foreign Relations in General.—The President announced that the policy of the United States was to promote peace. In spite of greater military preparations he announced to the country and world that "we are a peaceful people, committed to the settling of disputes by amicable adjustment rather than by force."

VICE-PRESIDENT DAWES

Senate Rules Reform.—During 1927 Mr. Dawes continued to impress himself upon the country as a striking personality and as one of the most influential and energetic of our Vice-Presidents. The proverbial obscurity pertaining to the incumbent of the office seemed not to apply to him. He continued through the year, as occasion offered, to advocate the reform of the Senate rules permitting cloture so as to bring about a decision on a pending measure. About the opening of the new Congress in December Dawes expressed the opinion that the Senate was about ready to reform its rules. "The filibuster in the last session," he said, "resulted in a feeling among Senators themselves that a change in the rules is

not only advisable but necessary." Several resolutions were introduced to remedy the evils of the filibuster. The most general support was given to a provision for applying cloture to revenue and appropriation bills during a short session. That would take out of the hands of minorities, or individuals, the power to threaten the blocking of government business, compelling an extra session unless concessions in general legislation were made to the minority, or to a filibusterer with some special or local interest to serve. "I am in favor of majority cloture," said Dawes, "because I believe it is necessary to enable the majority to exercise its constitutional functions."

The Vice-President also spoke in favor of the Norris Constitutional Amendment changing the date for the meeting of Congress and abolishing the short session.

Limitation of Armaments and World Peace.—At Buffalo (August 7) at the dedication of the International Peace Bridge, Vice-President Dawes spoke boldly and effectively on the failure of the Geneva Disarmament Conference. He spoke of the ties of friendship between the English-speaking peoples, "as firmly based on common understanding and ideals as this Bridge is based on the firm bedrock of Niagara." The Geneva conference had failed, but it had shown again the desire of the nations to eliminate competitive war preparation. There is need to educate the people. To Dawes it seemed unbelievable that Great Britain and the United States, bound solemnly to the principle of equality, will again place upon their people the burden of large competitive navies merely because their experts disagree upon details. Any serious difference between these two peoples will find in our hearts an anxious and universal cry for peaceful and reasonable adjustment.

Primaries.—In the *North American Review* for June Mr. Dawes arraigns the nominating primaries as a cause of many political ills, blames these primaries for "blocs" in Congress, and urges a restoration of the convention system.

III. THE NATIONAL GOVERNMENT

CABINET STATESMEN

BY JAMES A. WOODBURN

PROFESSOR, UNIVERSITY OF MICHIGAN

SECRETARY KELLOGG

The State Department has had a strenuous year and has been subjected to severe criticism. In a general way Secretary Kellogg's policies were those of his chief toward Mexico, China, Nicaragua, the League of Nations, and World Peace policies that have been indicated in the discussion of the President. The principal issues of a general economic nature are indicated below.

Mexico.—In his handling of the Mexican problem Secretary Kellogg seemed obsessed by suspicion. He offered to the Foreign Relations Committee of the Senate evidences of "Red plots" and of the Mexican Government's aid to the Sacasa Government in Nicaragua. He urged that there was a Communist plot in Central America and that the Soviet and Mexican governments were behind it. In an anti-Bolshevist outburst he quoted Chicherin's supposed desire to use Mexico as a base for communist anti-American activity. The forces of peace went into quick action and there was an outpouring of protests to the White House. Senator Robinson, of Arkansas, Democratic floor leader in the Senate, introduced a resolution in favor of arbitration with Mexico, which passed by an overwhelming vote.

Foreign Loans.—The policy of the State Department continued in a measure to be that of supervising private loans to foreign governments and corporations. The practice grew up while Mr. Charles E. Hughes was Secretary of State, of requesting American banking houses to submit their proposed loans to the State Department, which objected to some and endorsed others. This policy in 1927 was attacked by Senator Carter Glass, of Virginia, as extra-legal and dangerous.

Outlawing War.—Appeals both at home and abroad continued to come to the State Department for a more positive policy designed to make war

less probable between nations. The Department of State indicated its willingness to discuss the Briand proposal for the outlawry of war between France and America, and announced its readiness to adopt the Briand plan in part, in the renewal of the Root arbitration treaty with France which expires by limitation in February, 1928. The new French treaty will go much farther along the line of arbitration and it will serve as a pattern for such treaties with all other countries. As to adopting a policy of refusing to give material aid to an aggressor nation, the course of the Department was less clear, because of the difficulty of defining in advance what would constitute an "aggressor" nation. In renewing the French treaty for arbitration it is supposed there will be difficulty about matters of "vital interests" and "national honor." But the State Department hopes that in the preamble of the new treaty such a comprehensive statement may be made of pacific intentions as will embody the proposals for the outlawry of war that have been made from so many sources. However the Department is not yet ready to eschew war as "an instrument of public policy."

SECRETARY MELLON

Secretary Mellon preferred to use the surplus for debt reduction rather than for tax reduction, and, therefore, he proposed a tax reduction of only \$225,000,000 as against \$400,000,000 which was urged by the United States Chamber of Commerce. On this there was a sharp controversy. In a letter which he sent to Lewis E. Pierson, President of the Chamber, Mellon characterized as "hardly worthy of a business man's report" statements made by Pierson in advocacy of the \$400,000,000 reduction. President Coolidge very heartily backed up his Secretary's position.

Secretary Mellon opposed the re-

CABINET STATESMEN

peal of the excise tax on the sale of automobiles and the tax on admissions and club dues, and contended that until the war debt is materially reduced the Federal Government should not rely exclusively upon the income tax, the tobacco tax, and customs dues, and he urged a positive provision against a possible deficit, as he thought it would be inexcusable to force the Government to borrow to meet running expenses. In a letter to President Hibben, of Princeton University, Secretary Mellon replied to the manifesto of certain professors on the revision of European debts to the United States (March 17).

SECRETARY OF WAR DAVIS

Secretary Davis outlined again general plans and principles for the mobilization of all industries in war time. He went on a tour of the Caribbean and the Canal Zone, and upon his return expressed an optimistic view of the United States policies in those regions. He made a statement on ways of relieving congestion and defenses of the Panama Canal (April 12). He flew from Austin to San Antonio for inspection of air service and landing fields (May 17). He was somewhat embarrassed in having to explain the exclusion of negro applicants from the Military Training Camps (April 29). Influences were brought to bear to make the "movies" help in the propaganda for the war branch of the Government, to make army activities known and to combat pacifist doctrines.

The larger part of the Secretary of War's annual report (submitted to the President on December 3) was taken up by a discussion of a great civil project for flood control on the Mississippi at an estimated cost of \$296,400,000. The report on this project, made by Major General Edgar Jadwin, Chief of Army Engineers. General Jadwin's report will mark an epoch in the history of the Mississippi River.

The Secretary reported a year of definite progress for the army. The Department is seeking to evolve a system of promotions which will assure reasonable advancement in grade to the individual and at the same

time serve the best interest of the Government. "The all important need of the War Department, so far as its military activities are concerned," said the Secretary, "is a continued stabilization of policy."

ATTORNEY GENERAL SARGENT

During 1927 the Department of Justice has not been much in the public eye. Its work is quiet, legalistic, never spectacular, and, however important, it makes but little appeal to public attention. The Attorney General refused to act in the case of Sacco and Vanzetti (August 21). In an address (June 23), the Attorney General severely condemned the flouting of the laws and the indifference to duty of citizens who ought to support the laws. He assailed liquor smuggling and other violations of the prohibition laws. On the McNary-Haugen farm relief bill he gave to the President his legal opinion that it was unconstitutional.

SECRETARY OF THE NAVY WILBUR

General Policy.—The Secretary as occasion offered expressed the interest of the Department in the development of aeronautics, including a proposed flight around the world at the equator. At the same time he urged that some curb be placed on long distance stunt flying. Secretary Wilbur welcomed the return to the Navy Department of oil supply reserves. He was not in sympathy with the agreement to scrap battleships, and he stood stoutly for naval parity with Great Britain.

The Magruder Charges.—Rear Admiral Thomas P. Magruder, in charge of the Navy Yard in Philadelphia, made in a magazine article some severe criticisms against the Navy for its inefficiency and extravagance. The Admiral charged that America gets only "a 200-million dollar navy for a 300-million dollar outlay"; for every dollar expended for repairs it is required that nearly four dollars be expended to maintain a navy yard to make repairs. Seven navy yards were doing the work that three could do. Yards have been built for purely political reasons.

According to the Admiral, the cost

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of the Navy has been quadrupled, rising from \$82,000,000 to \$300,000,000. There are too many admirals. Twice as many men and four times as many officers are living in Washington as twenty years ago, 508 in 1927 against 171 in 1908, with a full force of officers and clerks. Here is where the lobbying comes from, leading to favoritism, toadying, and politics within the Department. Soon after the charges appeared the Admiral was removed by Secretary Wilbur from his position in Philadelphia.

At the close of the year Secretary Wilbur recommended to the President and to Congress a plan for a vast enlargement of the navy,—a plan worked out by the Secretary and the Naval Board. This naval program proposed an expenditure of two billion dollars in twenty years for construction of new war vessels. In addition it was estimated that \$65,000,000 yearly will be needed for replacement of decaying vessels. The plan looks forward to a renewal of the building of the great battleships by 1931, at the expiration of the Washington treaty of 1921.

POSTMASTER GENERAL NEW

The parcels post and the air mail service showed a commendable growth during the year. Mr. Harry S. New, the Postmaster General, accepted the bid of the National Air Transport, Incorporated, for operation of the New York-Chicago air mail service, which brought about a controversy with the North American Airways, Inc., which claimed to have put in a lower bid. Other air mail lines were opened in different parts of the country.

In his annual report the Postmaster General showed revenues for the year of \$683,121,989, an increase of \$23,302,000 over those of 1926. The operating expenses were \$712,036,704. The Postmaster General proposes to submit at the appropriate time a comprehensive plan for an equitable adjustment of postal rates. The Postmaster General proposed to Congress the restoration of the 1 cent rate on private mailing of post cards; a lower rate on second-class mail matter; im-

provement in the special delivery service; and more expeditious handling, dispatch, transportation and delivery of all mail matter.

SECRETARY OF THE INTERIOR WORK

Secretary Work in his annual report showed a saving of \$27,709,408 in the annual cost of operating the Department. He reported the Indian service as "poverty stricken." He asked authority to enter into contracts with States for promoting the health and education of the Indians, and asserted that the States should assume greater responsibility for the Indians within their borders.

The Secretary urged the construction of the Colorado Boulder Dam, with Federal aid and under Federal control. He also urged relief from the necessity of disposing of the Osage oil resources in the face of over-production in the oil industry; desired encouragement for stock raising in the West; and advocated the reduction of the civil service retirement age from 70 to 60 years. He urged the importance of the protection from floods of Imperial Valley, California, and the Yuma reclamation project in Arizona,—with its tremendous agricultural possibilities.

The Bureau of Reclamation is at present constructing a number of engineering works which in size, cost, and natural obstacles, rank among the great irrigation projects of the world. These works are a part of a ten-year program, at a projected yearly expenditure of from nine to ten millions.

The Interior Department is planning settlement by groups of people on reclaimed lands (at present in the South) either on worn out and abandoned lands, or on lands where drainage and land clearing and other reclamation work are needed before settlement can begin.

SECRETARY OF AGRICULTURE JARDINE

In his annual report, Secretary Jardine found that agriculture had made substantial progress from the effects of post-war depression. He suggested sending experts abroad to study agricultural conditions there

with a view to widening our markets and obtaining data for farmers. He favored legislation toward organization and cooperation of farmers in united marketing; efforts to lessen margins between producers' and consumers' prices, to reduce transportation costs, to lessen the farmer's overhead charges by lowering local tax burdens, and improving credit facilities. On the whole, he thought the farm problem must be solved by the farmers themselves, and he opposed any legislation that would cause the government to enter the business. Jardine has been a steady opponent of the McNary-Haugen bill. His point of view was that "the farmers . . . would find relief in the fact that their shorter crops will bring higher prices." He said that the "adjustment of production to demand so as to avoid constant price fluctuations with cycles of surpluses and shortages, is largely a credit problem."

Secretary Jardine was attacked because of a break in cotton prices following the issuance of a Department price estimate. The Secretary ordered price predictions discontinued. In general his views and policies were widely attacked by farm leaders, journals and organizations throughout the country.

SECRETARY OF COMMERCE HOOVER

During 1927 Secretary Hoover continued to be one of the most active and prominent members of the cabinet. In April he was sent by the President to survey the needs arising from the Mississippi floods. He appealed to the country for relief to the sufferers. In June, after Lindbergh's Paris flight, Mr. Hoover announced his belief that airplanes would be in common use within a few years for trans-oceanic service. He expected to devote his attention to commercial aviation.

His plan for stabilizing the price of rubber and for releasing that commodity from monopoly control by English interests resulted in lower prices, and his efforts were warmly praised by the Rubber Exchange of New York.

After the final announcement of Mr. Coolidge's withdrawal from the

presidential race for 1928, Mr. Hoover was regarded as the outstanding candidate from among the members of the cabinet.

The Secretary's annual report claims for the fiscal year ending June 30 "the progress characteristic of American industry." The year was a record one for American trade and industry. There was very little unemployment, and wages remained higher "than anywhere else in the world or than in any other time in world history."

The new construction undertaken in the year, amounting to over \$7,000,000,000 in value, was a powerful factor in maintaining business activity and prosperity. Fluctuations in building construction were less marked. Workers in the building trades were enjoying more stable employment, while costs of construction to home builders have been lower. There has been a growing demand for better homes.

Construction of public buildings has also increased. Also there are gains in the volume of railway traffic; freight tonnage has been 5½ per cent higher than for the year before. The increased prosperity of the railways has continued; car shortage has been overcome, poor equipments cut down, delays in traffic reduced,—making altogether the most satisfactory situation for the railroads in recent years.

Secretary Hoover urged the enlargement of the Webb-Pomerene export trade law, in order to permit the formation in the United States of corporations to engage in cooperative buying of raw materials abroad, just as corporations may now be formed here for the selling of goods in foreign countries without danger of prosecution under the Sherman Anti-Trust Act. This proposal has the support of rubber producers, automobile manufacturers, and farm organizations. Mr. Hoover believes that if American consumers were allowed to set up common purchasing agencies for these imported raw materials "where there is positive combination in control, our people could hold their own in dealings with such combinations."

III. THE NATIONAL GOVERNMENT

SECRETARY OF LABOR JAMES J. DAVIS

General.—In his annual report Secretary Davis called for the maintenance of high wages, and for a modification of anti-trust laws to promote this end. To his mind the secret of the national prosperity is high production and high wages,—with resulting cessation of strike activity.

The Secretary called attention to the use of injunctions in labor disputes; the laborers think the use of the injunction is unjust and too frequent. Congress, said the Secretary, should clarify the Clayton amendments of 1914, so there may be no cause, real or apparent, for the belief that controversies in labor disputes are being determined through judicial legislation.

On the question of bituminous coal mining he thought the industry "lags behind the others in living up to American standards of organization and business administration." He suggested a series of corporations with combined selling agencies for solving the problems of coal mining, to stabilize production, eliminate the waste of over-production, and to make employment and wages continuous.

A delegation of labor leaders called on President Coolidge to ask his interest and aid in settling the bituminous workers' strike on fair conditions. The President refused to act, and passed the matter over to his Secretary of Labor, who sought in vain to bring results from a conference with the operators and miners. He described the present situation in the coal industry as "a menace to national prosperity, a liability rather than an asset to the nation." One way, he suggested, would be for the leaders in coal to submit the industry to control by an umpire or over-lord—"a man of ability, courage, decision, and heart, of the type of Charles Evans Hughes."

Immigration.—Secretary Davis has long favored a policy of selection of immigrants, based on investigation at the ports of origin. We ought to select the elements giving promise of sturdy and upright citizenship. Fully 113,000 alien born had been found to be public charges in our various institutions. Secretary Davis would give discretion to administrative officers for handling special cases, to adjust hardships which come from quota limitations.

FEDERAL ADMINISTRATIVE SERVICE

By WILLIAM M. SCHUYLER

ASSOCIATE EDITOR, THE AMERICAN YEAR BOOK

THE PRESIDENT AND VICE-PRESIDENT

President.—Calvin Coolidge, of Massachusetts (Republican). Sworn into office as President of the United States, August 3, 1923, in succession to the late President Harding. Re-elected to the presidency, November 4, 1924. Inaugurated for his first elective term, March 4, 1925.

Vice-President. — Charles Gates Dawes, of Illinois (Republican). Inaugurated Vice-President of the United States, March 4, 1925.

Secretary to the President.—Everett Sanders of Indiana, succeeded C. Bascom Slemm, resigned, as Secretary to the President, March 4, 1924. Mr. Sanders was formerly a Repre-

sentative in Congress from the Fifth District of Indiana.

Vacancy.—By Act of Congress, in the case of vacancy occurring in the office of President through the death or removal of both the President and the Vice-President, the Cabinet officers succeed to the presidency in the order indicated in the arrangement of the following summary of the executive departments.

DEPARTMENT OF STATE

Secretary of State.—Frank Billings Kellogg.

Under-Secretary of State.—Robert E. Olds.

Assistant Secretaries of State.—Wilbur J. Carr.—William R.

FEDERAL ADMINISTRATIVE SERVICE

Castle, Jr.—Francis White.—
Nelson T. Johnson.

Foreign Service Personnel Board.—
Robert E. Olds, Under-Secretary
of State, chairman.—Wilbur J.
Carr, Assistant Secretary of
State.—William R. Castle, Jr.,
Assistant Secretary of State.—
Edward J. Norton, Chairman
of the Executive Committee of
the Board.—William Dawson,
member of the Executive Com-
mittee.—G. Howland Shaw,
member of the Executive Com-
mittee.

Solicitor.—Green H. Hackworth.

Economic Adviser. — Arthur N.
Young.

Chief Clerk.—E. J. Ayers.

Secretary to the Secretary of State.
—William H. Beck.

Chiefs of Divisions:
Far Eastern Affairs.—John K.
Caldwell.
Latin-American Affairs.—Stokeley
W. Morgan.
Western European Affairs.—J.
Theodore Marriner.
Near Eastern Affairs.—G. How-
land Shaw.
Mexican Affairs.—Franklin Mott
Gunther.
Eastern European Affairs.—Robert
E. Kelley.
Passport Control. — Parker W.
Buhrman.
Publications.—Tyler Dennett.
Current Information.—Michael J.
McDermott.
Foreign Service Administration.—
Herbert C. Hengstler.

Chiefs of Bureaus:
Accounts and Disbursing Clerk.—
William McNeir.
Indices and Archives.—David A.
Salmon.

Chiefs of Offices:
Consular Commercial.—Frederick
T. F. Dumont.
Coordination and Review.—Mar-
garet M. Hanna.
Visa.—George L. Brandt.
Executive Committee of Foreign
Service Personnel Board.—Worth-
ington E. Stewart.
Foreign Service Buildings.—Keith
Merrill.

Editor of Laws of Congress.—Henry
L. Bryan.

Officer in Charge of Ceremonials.—
Charles L. Cooke.

Translators.—John S. Martin, Jr.—
Burton H. Lamore.

TREASURY DEPARTMENT

Secretary of the Treasury.—Andrew
W. Mellon.

Charged with the management of
the national finances. He prepares
plans for the improvement of the
revenue and support of the public
credit; superintends collection of the
revenue; grants warrants for all
moneys paid from and into the Treas-
ury; controls construction of public
buildings, coinage and printing of
money, and the administration of the
Coast Guard and the Public Health
Service; ex-officio chairman of the
Federal Reserve Board and of the
Federal Farm Loan Board.

The Under-Secretary (in general
charge).—Ogden L. Mills.

Assistants.—W. N. Thompson.—
Charles R. Schoeneman.

Assistant Secretary (in charge of
fiscal offices).—Henry Herrick
Bond.

Assistants.—(Same as for Under-
Secretary, above.)

Assistant Secretary (in charge of
public buildings and miscellane-
ous).—Carl T. Schuneman.

Assistants.—H. R. Sheppard.—L.
C. Martin.

**Assistant Secretary in Charge of
Customs, Coast Guard and Pro-
hibition.**—Seymour Lowman.

Assistant.—Frank C. Rose.

Commissioner of the Public Debt.—
William S. Broughton.

**Deputy Commissioner of the Public
Debt.**—S. R. Jacobs.

**Commissioner of Accounts and De-
posits.**—Robert G. Hand.

**Deputy Commissioner of Accounts
and Deposits.**—D. W. Bell.

Chief Clerk.—F. A. Birgfield.

**Private Secretary to the Secretary
of the Treasury.**—John Kieley.

Chiefs of Divisions:

Appointments.—James E. Harper.
Bookkeeping and Warrants.—E. F.
Bartelt.

Customs.—Ernest W. Camp.

Deposits.—E. D. Batchelder.

Loans and Currency.—C. N. Mc-
Groarty.

III. THE NATIONAL GOVERNMENT

Paper Custody.—F. G. Collins.
Printing.—F. F. Weston.
Public Debt Accounts and Audit.—
 M. R. Loanman.
Secret Service.—W. H. Moran.
Special Agency Service, Customs.—
 Nathaniel G. Van Doren.
Disbursing Clerk.—J. L. Summers.
Government Actuary.—Joseph S. McCoy.

Comptroller of the Currency.—Joseph W. McIntosh.

Has supervision of the national banks, their examination and reports; the preparation and issue of national bank circulation; the redemption and destruction of national bank notes. Ex officio a member of the Federal Reserve Board; and in this capacity draws a salary of \$7,000 in addition to his salary of \$5,000 attached to the office proper of Comptroller of the Currency.

Treasurer of the United States.—Frank White.

Charged with the receipt and disbursement of all public moneys deposited in the Treasury and sub-treasuries and in national bank depositories.

National Bank Redemption Agency.—George O. Barnes.

Director of the Bureau of the Budget.—Herbert M. Lord.

Chief Coordinator.—

Commissioner of Internal Revenue.—D. H. Blair.

Charged with general supervision of the collection of all internal revenue taxes, including the income tax, and the enforcement of internal revenue laws.

Director of the Mint.—Robert J. Grant.

Has general supervision of the mints and assay offices.

Register of the Treasury.—W. O. Woods.

Federal Farm Loan Bureau.—Chairman (ex-officio).—Andrew W. Mellon, Secretary of the Treasury.

Farm Loan Commissioner and Executive Officer.—Eugene Meyer.

Bureau of Engraving and Printing.—Director, Alvin W. Hall.

Produces all the securities and similar work of the Government printed from steel plates.

Bureau of Public Health Service.—Surgeon General, Hugh S. Cumming.

Charged with the framing and enforcement of regulations for the prevention of the introduction and spread of contagious diseases; supervision in the quarantine service of the United States, and supervision of the marine hospitals.

The Coast Guard.—Commandant, Rear Admiral Frederick C. Bullard.

Supervising Architect's Office.—Acting Supervising Architect.—James A. Wetmore.

Custom House.—Deputy Collector in Charge, Leo A. Gertman.

DEPARTMENT OF WAR

Secretary of War.—Dwight Filley Davis.

Assistant Secretary of War.—Hanford MacNider.

Assistant and Chief Clerk.—John C. Scofield.

Private Secretary to Secretary of War.—John W. Martyn.

Assistant Chief Clerk.—John B. Randolph.

Disbursing Clerk.—Sydney E. Smith.

Principal Clerk.—Frank M. Hoadley.

War Department General Staff.—Chief of Staff, Maj. Gen. Charles P. Summerall.

Office of the Chief of Cavalry.—Chief, Maj. Gen. Herbert B. Crosby.

Office of the Chief of Field Artillery.—Maj. Gen. William J. Snow.

Office of the Chief of Coast Artillery.—Chief, Maj. Gen. Andrew Hero, Jr.

Office of the Chief of Infantry.—Chief, Maj. Gen. Robert H. Allen.

Office of the Adjutant General.—The Adjutant General, Maj. Gen. Lutz Wahl.

Office of the Inspector General.—Inspector General, Maj. Gen. W. C. Rivers.

Office of the Judge Advocate General.—Judge Advocate General, Maj. Gen. J. A. Hull.

Office of the Quartermaster General.—Quartermaster General, Maj. Gen. B. F. Cheatham.

FEDERAL ADMINISTRATIVE SERVICE

Office of the Chief of Finance.—Chief of Finance, Maj. Gen. Kenzie W. Walker.

Office of the Surgeon General.—Surgeon General, Maj. Gen. M. W. Ireland.

Office of the Chief of Engineers.—Chief, Maj. Gen. Edgar Jadwin.

Office of the Chief of Ordnance.—Chief, Maj. Gen. Clarence W. Williams.

Office of the Chief Signal Officer.—Chief, Maj. Gen. Charles McK. Saltzman.

Office of the Chief of Air Service.—Chief of the Air Service, Maj. Gen. Mason M. Patrick.

Bureau of Insular Affairs.—Chief of Bureau, Maj. Gen. Frank McIntyre.

Philippine Government.—Vacancy (Eugene A. Gilmore, Acting Governor General).

Porto Rico Government.—Governor Horace M. Towner.

Militia Bureau.—Chief, Maj. Gen. Creed C. Hammond.

Office of the Chief of the Chemical Warfare Service.—Chief, Maj. Gen. Amos A. Fries.

The Army War College.—Commandant.—Maj. Gen. Hanson E. Ely.

DEPARTMENT OF JUSTICE

Attorney-general.—John Garibaldi Sargent.

Represents the United States in all legal matters.

Solicitor - general.—William D. Mitchell.

Special Assistant to the Attorney-general.—Paul A. Chase.

Assistant to the Attorney-general.—William J. Donovan.

Assistant Attorneys-general.—John Marshall, Mabel Walker Willebrandt, Herman J. Galloway, Bertice M. Parmenter, Oscar R. Luhring, George R. Farnum.

Assistant Attorney-general, Customs Division.—Charles D. Lawrence.

Director Bureau of Investigation.—J. Edgar Hoover.

Private Secretary and Assistant to the Attorney-general.—Ugo J. A. Carusi.

Chief Clerk and Administrative Assistant.—James W. Baldwin.

Assistant Chief Clerk and Appointment Clerk.—Charles B. Sornborger.

Chief, Division of Mails and Files.—Arthur Robb.

Chief, Division of Supplies and Printing.—Edward N. Bodholdt.

Librarian.—George Kearney.

Superintendent of Prisons.—Albert H. Conner.

Attorney in Charge of Pardons.—James A. Finch.

Attorney in Charge of Titles.—Vacant.

General Agent.—John W. Gardner.

Assistant General Agent.—H. J. McClure.

Disbursing Clerk.—Don C. Fees.

POST OFFICE DEPARTMENT

Postmaster General.—Harry Stewart New.

Private Secretary to Postmaster General.—Alice Mummenhoff.

Chief Clerk.—Audus T. Davis.

Assistant Chief Clerk.—Charles E. Warren.

Appointment Clerk.—Alice B. Sanger.

Disbursing Clerk.—Louis A. Delano.

Executive Assistant to the Postmaster General.—Joseph Stewart.

Office of Solicitor:

Solicitor.—Horace J. Donnelly.

Assistant solicitor.—Walter E. Kelly.

Assistant attorneys.—Calvin W. Hassell, Harold F. Jones, William L. Rhoads, Stewart E. Blassingham, Abraham B. Keefer, William C. O'Brien, John J. Gregory.

Division of Purchasing Agent:

Purchasing Agent.—Thomas L. Deggan.

Chief Clerk.—Alfred H. Keim.

Division of Post Office Inspectors:

Chief Inspector.—Grant B. Miller.

First Assistant Postmaster General.—John H. Bartlett.

Second Assistant Postmaster General.—Warren Irving Glover.

Third Assistant Postmaster General.—Robert S. Regar.

Fourth Assistant Postmaster General.—H. H. Billany.

Geological Survey.—Director, George Otis Smith.

Bureau of Reclamation.—Commissioner, Elwood Mead.

III. THE NATIONAL GOVERNMENT

- National Park Service.**—Director, Stephen T. Mather.
- Board of Indian Commissioners.**—Chairman, ———.
- St. Elizabeth's Hospital.**—Superintendent, William A. White.
- Freedmens' Hospital.**—Surgeon in Chief, William A. Warfield, M.D.
- Howard University.**—Patron ex officio.—Hubert Work, M.D., Secretary of the Interior.
- President of the Board of Trustees.**—President.—Mordecai W. Johnson.
- Columbia Institution for the Deaf.**—Patron, ex officio.—Calvin Coolidge, President of the United States.
- President.**—Percival Hall.
- Southern Appalachian National Park Commission.**—Chairman, Henry W. Temple.
- Territorial Officials:**
- Governor of Alaska.**—George A. Parks.
- Governor of Hawaii.**—Wallace R. Farrington.
- The Alaska Railroad.**—General Manager, Noel W. Smith.

DEPARTMENT OF AGRICULTURE

Secretary of Agriculture.—William Marion Jardine.

Exercises supervision over agricultural industry, experiment stations, quarantine stations for imported cattle, inspection of foods and drugs, national forest reserves, and interstate game laws.

Assistant Secretary.—R. W. Dunlap.

Assistant to the Secretary.—F. M. Russell.

Administrative Assistant.—M. E. Eisenhower.

Director of Scientific Work.—A. F. Woods.

Director of Regulatory Work.—Walter G. Campbell.

Director of Extension Work.—C. W. Warburton.

Director of Personnel and Business Administration.—W. W. Stockberger.

Office of Information.—Director, Nelson Antrim Crawford.

Agricultural Extension Service.—Director, C. W. Warburton.

Office of Experiment Stations.—Chief, E. W. Allen.

Weather Bureau.—Chief, Charles F. Marvin.

Bureau of Animal Industry.—Chief, John R. Mohler.

Bureau of Dairying.—Chief, Carl W. Larson.

Bureau of Plant Industry.—Chief, William A. Taylor.

Forest Service.—Forester and Chief, W. B. Greeley.

Bureau of Chemistry and Soils.—Chief, Henry G. Knight.

Bureau of Entomology.—Entomologist and Chief, C. L. Marlatt.

Bureau of Biological Survey.—Biologist and Chief, Paul G. Redington.

Bureau of Public Roads.—Chief, Thomas H. MacDonald.

Bureau of Agricultural Economics.—Chief, Lloyd S. Tenny.

Bureau of Home Economics.—Chief, Louise Stanley.

Librarian.—Claribel R. Barnett.

Packers and Stockyards Administration.—John T. Caine.

Grain Futures Administration.—Chief, J. W. T. Duvel.

Insecticide and Fungicide Board.—J. K. Haywood.

Federal Horticultural Board.—Chairman, C. L. Marlatt.

DEPARTMENT OF COMMERCE

Secretary of Commerce.—Herbert Hoover.

Charged with promoting commerce, mining, manufacturing, shipping, fisheries, patents, and transportation.

Assistant Secretary.—Walter F. Brown.

Solicitor.—Ephraim F. Morgan.

Chief Clerk and Superintendent.—E. W. Libbey.

Disbursing Clerk.—Charles E. Molster.

Director of Purchases and Sales.—Walter S. Erwin.

Private Secretary to the Secretary.—Bradley D. Nash.

Private Secretary to the Assistant Secretary.—Kenneth MacPherson.

Chiefs of Divisions:

Appointments.—Clifford Hastings.

Publications.—Thomas F. McKeon.

Supplies.—Walter S. Erwin.

FEDERAL ADMINISTRATIVE SERVICE

Bureau of the Census.—Director, William M. Steuart.

Bureau of Foreign and Domestic Commerce.—Director, Julius Klein.

Bureau of Standards.—Director, George K. Burgess.

Bureau of Fisheries.—Commissioner, Henry O'Malley.

Bureau of Lighthouses.—Commissioner, George R. Putnam.

Coast and Geodetic Survey.—Director, E. Lester Jones.

Bureau of Navigation.—Commissioner, Arthur J. Tryer.

Steamboat Inspection Service.—Supervising Inspector General, Dickerson N. Hoover.

Patent Office.—Commissioner, Thomas E. Robertson.

Bureau of Mines.—Director, Scott Turner.

DEPARTMENT OF LABOR

Secretary of Labor.—James John Davis.

Charged with the duty of fostering, promoting and developing the welfare of the wage earners of the United States.

Private Secretary to the Secretary of Labor.—John C. Meikle.

Office of the Assistant Secretary: Assistant Secretary.—Robe Carl White.

Private Secretary to the Assistant Secretary.—Anna V. Moynihan.

Second Assistant Secretary.—W. W. Husband.

Private Secretary to the Second Assistant Secretary.—Ralph H. Horner.

Solicitor.—Theodore C. Risley.

Office of the Chief Clerk:

Chief Clerk.—Samuel J. Gompers.

Disbursing Clerk.—R. P. Brown.

Chief, Division of Publications and Supplies.—Shelby Smith.

Appointment Clerk.—Robert C. Starr.

Librarian.—Laura A. Thompson.

Bureau of Labor Statistics.—Commissioner of Labor Statistics, Ethelbert Stewart.

Bureau of Immigration.—Commissioner General of Immigration, Harry E. Hull.

Children's Bureau.—Chief, Grace Abbott.

Bureau of Naturalization.—Commissioner of Naturalization, Raymond F. Crist.

Women's Bureau.—Director, Mary Anderson.

DEPARTMENT OF THE NAVY

Secretary of the Navy.—Curtis Dwight Wilbur.

Assistant Secretary.—Theodore Douglas Robinson.

Chief Clerk.—F. S. Curtis.

Private Secretary to the Secretary.—John B. May.

Clerk to the Secretary.—A. J. Doyle.

Private Secretary to the Assistant Secretary of the Navy.—Verne Simkins.

Chief of Appointment Division.—William D. Bergman.

Estimate Clerk.—Roy H. Moses.

Disbursing Clerk.—A. H. Hoiland.

Chief of Division of Records.—Charles T. Ogle.

Office of Naval Operations.—Chief of Naval Operations, Admiral Charles F. Hughes.

Bureau of Navigation.—Chief of Bureau, Rear Admiral Richard H. Leigh.

Bureau of Yards and Docks.—Chief, Rear Admiral L. E. Gregory.

Bureau of Ordnance.—Chief, Rear Admiral William D. Leahy.

Bureau of Construction and Repair.—Chief, Rear Admiral J. D. Beuret.

Bureau of Engineering.—Chief: Engineer in Chief, Rear Admiral John Halligan, Jr.

Bureau of Supplies and Accounts.—Paymaster General, Rear Admiral Charles Morris.

Bureau of Medicine and Surgery.—Chief, Rear Admiral E. R. Stitt.

Bureau of Aeronautics.—Chief, Rear Admiral William A. Moffett.

Office of Judge Advocate General of the Navy.—Judge Advocate General, Rear Admiral Edward H. Campbell.

Naval Consulting Board.—President, Thomas A. Edison.

Compensation Board.—Senior Member of the Board, Rear Admiral W. L. Capps.

General Board.—Admiral Charles F. Hughes, Maj. Gen. John A. Lejeune, Rear Admirals E. W. Eb-

III. THE NATIONAL GOVERNMENT

erle, A. T. Long, Richard H. Jackson, J. R. P. Pringle; Lieut. Col. L. C. Lucas, Commander Harold C. Train.

Board of Medical Examiners.—President, Rear Admiral A. M. D. McCormick.

Naval Examining Board.—President, Capt. Hayne Ellis.

Naval Retiring Board.—President, Rear Admiral A. M. D. McCormick.

Naval Dispensary.—Rear Admiral Cary T. Grayson.

Navy Yard and Station, Washington, D. C.—Commandant and Superintendent Naval Gun Factory, Rear Admiral A. L. Willard.

Naval Medical School.—Capt. Charles S. Butler.

Naval Hospital.—Capt. Charles E. Riggs.

Attendance on Officers.—Lieut. Commander John C. Parham.

Board for Examination of Medical Officers.—President, Capt. Charles M. Oman.

Board for Examination of Dental Officers.—Capt. Charles M. Oman.

Marine Corps.—Commandant, Maj. Gen. John A. Lejeune. Adjutant and Inspector, Brig. Gen. Rufus H. Lane.

DEPARTMENT OF THE INTERIOR

Secretary of the Interior.—Hubert Work.

Charged with pensions, public lands, Indian affairs, geological surveys, reclamation of arid lands, and mines.

First Assistant Secretary.—Edward C. Finney.

Assistant Secretary.—John H. Edwards.

Administrative Assistant.—Ebert K. Burlew.

Chief Inspector.—Joseph F. Gartland.

Executive Assistant.—Wm. J. Donald.

Chief Clerk.—W. Bertrand Acker.

Solicitor.—Ernest O. Patterson.

Assistant to the Solicitor.—Orlin H. Graves.

Board of Appeals.—George B. Gardner, William B. Newman, Alvah W. Patterson.

Superintendent of Classification.—John Harvey.

Chiefs of Divisions:

Disbursing.—J. B. Callahan.

Appointments, Mails and Files.—George E. Scott.

Publications.—Charles F. Glass.

Supplies.—Amos W. Hawk.

Traffic.—Charles E. Harris.

Medical Officer.—Charles E. O'Connor.

General Land Office.—Commissioner, William Spry.

Office of Indian Affairs.—Commissioner, Charles H. Burke.

Bureau of Pensions.—Commissioner, Winfield Scott.

Bureau of Education.—Commissioner, John J. Tigert.

United States Employment Service.—Director General, Francis I. Jones.

Bureau of Industrial Housing and Transportation.—Director, Robert Watson.

MISCELLANEOUS EXECUTIVE SERVICES

Smithsonian Institution.—Established 1846, under the terms of James Smithson's will, for the "increase and diffusion of knowledge among men." The former is accomplished by promoting original scientific research, and the latter by publication and lectures. The affairs of the Institution are managed by a Board of Regents. It cooperates with the Government and national scientific bodies.

Under the direction of the Smithsonian Institution are the National Museum, charged with preserving and utilizing objects of art and ethnological, geological and mineralogical collections belonging to the United States, and the Bureau of American Ethnology.

Acting Secretary.—C. G. Abbot.

Government Bureaus under the Direction of the Smithsonian Institution:

National Museum: Assistant Secretary in Charge.—Alexander Wetmore.

National Gallery of Art: Director, William H. Holmes.

FEDERAL ADMINISTRATIVE SERVICE

- Bureau of American Ethnology:**
Chief, J. Walter Fewkes.
- International Exchanges:** Assistant Secretary in Charge, C. G. Abbot.
- National Zoological Park:** Director, William M. Mann.
- Astrophysical Observatory:** Director, C. G. Abbot.
- Regional Bureau for the United States International Catalogue of Scientific Literatures.**—Assistant in Charge.—Leonard C. Gunnell.
- National Academy of Sciences:**
President.—Thomas H. Morgan.
Vice-President.—J. C. Merriam.
Foreign Secretary.—R. A. Millikan.
Home Secretary.—David White.
Treasurer.—G. K. Burgess.
Assistant Secretary.—Paul Brockett.
- National Research Council.**—Chairman.—Gano Dunn.
- Pan American Union.**—Director General.—L. S. Rowe.
- General Accounting Office.**—Comptroller General of the United States.—J. R. McCarl.
- Interstate Commerce Commission.**—Commissioners: John J. Esch, Balthasar H. Meyer, Henry C. Hall, Clyde B. Aitchison, Joseph B. Eastman, Johnson B. Campbell, Ernest I. Lewis, Frank McManamy, Thomas F. Woodlock, Richard V. Taylor, Ezra Brainerd, Jr.
- Civil Service Commission.**—Commissioners: President, William C. Deming, George R. Wales, Jesse Dell.
- United States Bureau of Efficiency.**
—Chief, Herbert D. Brown.
- Federal Reserve Board.**—Chairman.—Andrew W. Mellon, Secretary of the Treasury (ex officio); J. W. McIntosh, Comptroller of the Currency (ex officio).
Governor.—Roy A. Young.
Vice-Governor. — Edmund Platt, Adolph C. Miller, Charles S. Hamlin, Edward H. Cunningham, George R. James.
- Federal Trade Commission:**
Commissioners: Chairman, C. W. Hunt, William E. Humphrey, Abram F. Myers, Edgar A. McCulloch, Garland S. Ferguson, Jr.
- The United States Shipping Board.**—Members: T. V. O'Connor, E. C. Plummer, W. S. Benson, W. S. Hill, Jefferson Myers, R. K. Smith, P. S. Teller.
- United States Shipping Merchant Fleet Corporation.**—President, T. V. O'Connor.—Vice-President, E. C. Plummer.
- United States Railroad Administration.**—Director General, Andrew W. Mellon.
- Board of Tax Appeals.**—Chairman, Benjamin H. Littleton.
- War Finance Corporation.**—Chairman.—Andrew W. Mellon, Secretary of the Treasury.
Managing Director. — Eugene Meyer.
Directors.—George R. Cooksey, Floyd R. Harrison.
- Alien Property Custodian.**—Howard Sutherland.
- United States Tariff Commission.**—Chairman.—Thomas O. Marvin.
Vice-Chairman.—Alfred P. Dennis.
Commissioners.—Edward P. Costigan, Edgar B. Brossard, Sherman J. Lowell, Lincoln Dixon.
- United States Employees' Compensation Commission.**—Chairman, Mrs. Bessie Parker Brueggeman, Harry Bassett, Charles H. Verill.
- United States Veterans' Bureau.**—Director, Frank T. Hines.
- Federal Board for Vocational Education.**—Director, J. C. Wright.
- Federal Power Commission.**—Commissioners.—Dwight F. Davis, Hubert Work, William M. Jardine.
Executive Secretary.—O. C. Merrill.
- The Commission of Fine Arts.**—Chairman, Charles Moore.
- World War Foreign Debt Commission.**—Chairman, Andrew W. Mellon.
Commissioners, Frank B. Kellogg, Herbert Hoover, Reed Smoot, Theodore E. Burton, Charles R. Crisp, Richard Olney, Edward N. Hurley.
- Personnel Classification Board.**—Chairman, Carlos C. Van Leer; Guy Moffett, W. H. McReynolds.

III. THE NATIONAL GOVERNMENT

FEDERAL CIVIL SERVICE

BY CLINTON ROGERS WOODRUFF

HONORARY SECRETARY, NATIONAL MUNICIPAL LEAGUE

PROHIBITION SERVICE

The outstanding development in the operation of the merit system in the Federal service during the past year was its application to the Prohibition Service. It was the highest compliment that could have been paid to the administration of the Civil Service Act, since Congress applied the competitive system to all the positions with the sole exception of the Commissioner. It did not blanket in the present force, but vacated all of the 2,500 positions and required that the occupants should only be retained if reached for appointment upon open competition on the same basis with all other persons.

This is the most drastic application that has been made of the competitive principle and is significant since friends and critics alike of prohibition halted the filibuster in the closing days of the last session of Congress long enough to classify the new Prohibition Bureau. The estimate of \$200,000, however, for the conduct of the examinations failed of passage along with important legislation affecting seats in the Senate, pension appropriations, compensation for injuries and public buildings.

REORGANIZING THE FORCE

All parties had reached the conclusion that conditions in the prohibition force under the wide-open spoils system prevailing had become intolerable, and were a reflection not alone upon prohibition enforcement, but upon Congress and the country. In an effort to improve that situation Congress has placed the responsibility for testing the personnel upon the Civil Service Commission.

It is to be recorded, however, that while the placing of the Prohibition forces under civil service is a notable compliment to the principles of the merit system, considerable doubt has been expressed by its friends as to whether even that system can withstand the corrupting influences sur-

rounding and supporting the illicit liquor traffic.

The Commission began to make certifications of eligibles for the administrative positions in the Bureau of Prohibition late in the fall. The administrative positions comprise the assistant commissioner, chief of field division, five field supervisors, 25 administrators, 25 assistant administrators for enforcement work, 25 assistant administrators for permissive work, and 50 deputy administrators. The last step in the examinations for the administrative positions was the character investigation. Twenty-two trained men of the Commission's force were engaged in it. Finger prints of applicants were made at the time of the oral examination.

For positions below the grades of the administrative positions named above, all of the 18,000 applicants have been given preliminary consideration, and the written examinations have been applied where such tests were required. The rating of the written and other basic tests for all of these positions is proceeding as rapidly as the means available will permit. The procedure of oral tests, character investigations, and finger printing in connection with them could not proceed until the convening of Congress and the appropriations of funds for the purpose.

EXPANSION OF CLASSIFIED SERVICE

Variety.—Each year Congress places the personnel of new officers or groups of positions within the provisions of the civil service law. Among the new or expanded activities thus authorized at the last two sessions of Congress are the Aeronautical bureaus of the War Department and the Navy Department; the new bureau of Civil Aviation of the Department of Commerce; the Board of Mediation, which absorbed the United States Railroad Labor Board; the Divisions of Cooperative Marketing, Department of Agriculture; the enlarged

FEDERAL CIVIL SERVICE

public buildings program; military post construction under the War Department; the new Bureau of Customs; the Federal Industrial Institution for Women under the supervision of the Department of Justice; probation officers of the United States courts; the new Radio Commission; the field force of the Employees' Compensation Commission due to the Seamen's and Longshoremen's Act; and the Foreign Service Bureau of Foreign and Domestic Commerce.

Statistics.—The whole number examined during the year ending June 30, 1927, for appointment in the Federal classified service was 267,340 and the number appointed was 38,777. Each year the merit system in the Federal service expands in its application not merely in the number of positions withdrawn from the spoils system, but in effectiveness in remedying abuses and in promoting efficiency and economy of administration.

On June 30, 1927, the number of employees in the Federal executive civil service was 559,138. Of this number 422,998 are classified, leaving 136,140 not subject to examination under the civil service rules. In addition, examinations are held for 15,650 Presidential postmasters; unskilled laborers; firemen and policemen of the District of Columbia, and some other classes of positions outside the classified service.

Post Office Laborers.—On October 5 the Commission announced that the President had further extended the classified service by bringing within its provisions all laborers in first and second class post offices throughout the country. Several thousand positions are affected by the order.

HOCH LAW FOR COMMERCE EMPLOYEES

Congress also has to its credit the enactment of the so-called Hoch law, which standardizes and stabilizes the foreign commerce service in the Bureau of Foreign and Domestic Commerce. This law had the strong support of the Administration, emanating from Secretary Hoover's office. It is important from the point of view of personnel because it provides

that the Secretary of Commerce shall appoint officers of the foreign service after competitive examinations, to be held by the Civil Service Commission in cooperation with the Department of Commerce. This has been the procedure for a number of years, but it has been merely by working agreement between the Commission and the Department. A new Secretary could have overthrown it at any time. The service in the Bureau of Foreign and Domestic Commerce is classified under the following titles: Commercial attaches, senior grade and junior grade; assistant commercial attaches, trade commissioners, and assistant trade commissioners. The salary grades range from \$10,000 a year maximum to \$3,000 a year minimum through seven classes.

EXECUTIVE QUESTIONS

President Coolidge has continued to give support to the merit system, particularly in his messages to Congress. He is entitled to credit for having included in the classified service nearly 500 village carriers, who were hitherto exempt. However, his extensions of the classified service so far are not particularly noteworthy.

So far as the classification work in the Federal service goes, there is little to report. The bill which was intended to place the functions of the Classification Board in the Commission failed of passage, and that Board is making very slow progress. They have done some things with respect to a classification of the field service which constitutes a real step in advance, but they must run the gauntlet of Congress again in order to obtain legislation to make the classification effective.

LOCAL CIVIL SERVICE

So far as the general extension of the system is concerned there was very little progress during the year. There were only two additional jurisdictions to embrace the system: Wayne County, Michigan, and Alameda County, California. The citizens of the former had a rather feeble bill passed by the Michigan legislature savoring pretty markedly of po-

III. THE NATIONAL GOVERNMENT

political control. While this initial step is decidedly encouraging, not much improvement in administration is expected for some time to come. In Alameda County, of which Oakland is the county seat, the situation is on the contrary much more hopeful. This law adopted through a county charter is much more effective and takes advantage of the more recent progress in civil service legislation.

Governor Moody of Texas made a notable effort. The Governor is going to make the subject of civil service legislation one of the causes for a special session. It's an uphill fight for him, however, and it is doubtful if he gets a satisfactory bill through. Although there were civil service bills in other states, like Nebraska, Oregon and Michigan, they did not get anywhere.

DEVELOPMENT OF TESTS

In the administration of the law, there has been a decided improvement principally in the matter of testing recruits for the service. There has been more extended use of the short answer type of examination and consequent improvement in the eligibles that have been certified. The Federal Civil Service Commission is going forward very substantially in the improvement of its tests through research studies, thus making the test more predictive of the employees' work.

A number of public personnel agencies have taken steps during the year to improve the technical phases of their work. Through cooperation with the Bureau of Public Personnel Administration, a number of tests for fire, police, clerical, teaching, and skilled labor positions have been developed which have proved their superiority over the tests formerly used. This Bureau has also developed some simple, easily given tests of honesty which show that about half of those who seek positions of trust in the public service have such low standards that when given the incentive and opportunity they are willing to alter written statements in a manner they believe to be to their advantage.

MASSACHUSETTS PRACTICE

Reclassification.—In Massachusetts all positions in the state service have been reclassified by the Director of Personnel of the state Department of Administration and Finance, and the new classification has gone into effect, carrying with it a minimum and maximum salary for each grade. The rate of compensation has been raised in practically all classes. This it is confidently expected will result in attracting high grade persons to the service.

During the year, the Commissioner of Civil Service abolished the labor bureau in this division, which had supervision of the examination, registration and certification of laborers for the Commonwealth service, the city of Boston, and fourteen cities outside of Boston where the labor service is classified. The work has been transferred to the main Civil Service office.

Police.—In promotional examinations in police departments outside of Boston, a special credit of from one-half to four per cent in the subject of experience has been allowed, depending on the nature of the act for which a commendation was given. This maximum credit of four per cent would amount to an additional one and eight-tenths per cent in the general average in an examination for sergeant. On April 26, the Commissioners abolished special credits in all police promotional examinations, believing that the giving of these credits was unfair, in that it gave an opportunity to a head of a department to extend special privileges to favorites and through personal or political motive, to give commendations for simple acts in order to boost the percentage in the examination. The abolishing of special credits does not mean, however, that the applicant will receive no credit in the examination for any meritorious act which he may have performed, inasmuch as thirty-five points in a total of one hundred in the subject of experience are set aside for police efficiency, and under this heading, the expert examiners have an opportunity to give credit for all special acts which, in their opinion should be given credit.

FEDERAL CIVIL SERVICE

RETIREMENT SYSTEMS

The Federal retirement system was liberalized so as to make the maximum annuity \$1000 instead of \$720 and a retirement system was established in Oakland. At the request of several civic agencies, the Bureau of Public Personnel Administration has drafted a proposed Federal act, which will be brought before Congress, providing for the centralization in one agency of the personnel functions now exercised by seven existing agencies or handled directly through congressional action. It is generally understood, however, that this measure will not be pressed to a vote unless it receives the general endorsement of the advocates of the merit system.

During the year extensive classification and compensation studies have been made in Massachusetts, Wisconsin, Virginia, Cincinnati, Cleveland, and some other places. To a considerable extent the recommendations included in the survey reports have been made a part of the current practice.

JUDICIAL DECISIONS

Several decisions of the courts made during the year are significant. In Milwaukee County the courts held that the appointment to a lower position of a person whose name is on an employment list for a higher position does not act to remove the name from the higher list. In New York the courts held in one case that a state law requiring the payment of not less than the prevailing rate for a day's work in the same trade or occupation in the locality is sufficiently definite to be legal, and in another case that an act of the legislature intended to make it necessary to appoint a certain man to a position by specifying qualifications which only he possessed was unconstitutional. In Oakland, California, the courts upheld the rights of the Civil Service Board to hold tests to establish an employment list in anticipation of a vacancy. The courts in the District of Columbia upheld the right of the United States Civil Service Commission to withhold from a citizen who brought suit the names

of those employed by the Federal Government.

PROGRESS OF REFORM

The Merit System began its advance forty-four years ago with the passage of the Pendleton Civil Service Act by Congress. The aggressive activity of the leaders of the movement in the first twenty years made its spread rapid. Its sway was extended over the greater part of the Federal service. The chief cities were placed under its control and several states adopted it for the selection of their employees. At one time there were eleven states with civil service commissions and there are now nine, Kansas and Connecticut having retired into the jungle of political appointments.

The larger cities of the country have taken up the system in one form or another and several counties have adopted it for their employment purposes, but the zeal that carried the system forward at the hands of Curtis, Schurz, Eaton, Bonaparte and Roosevelt has subsided. The aggressive leaders have gone and there are few to take their places. Talent is devoted to the problems of civil service administration, but it is occupied with the rather humdrum duty of executing the laws and providing our states, cities and the Federal Government with competent employees. Thirty-nine state governments lie outside the fold and nearly a dozen cities having more than 100,000 inhabitants have their employees chosen for political reasons.

PUBLIC INTEREST

In most parts of the United States and Canada there is good reason to believe that the merit system as administered by a central personnel agency, no longer commands the general public interest it did a generation ago. This, though disappointing to those who realize the importance of the personnel problem in the public service, is perhaps natural. Laws providing for the merit system having been enacted in most populous jurisdictions, the public is hardly likely to maintain a keen interest in the technical phases of their admin-

III. THE NATIONAL GOVERNMENT

istration. Those adversely affected or unsympathetic with the idea, on the other hand are provided with a definite target for their arrows. Nevertheless the all but universal disappearance of the old zeal for a measure designed to improve public administration cannot but be a cause for concern.

IMPROVEMENT OF TECHNIQUE

There is, however, a bright side to the picture. Along with a marked falling off in popular esteem has gone a truly remarkable improvement in the technical phases of public personnel administration. Even the weakest public employment agency is likely to do a number of things better today than the most advanced were able to do them fifteen years ago. The duties classification, essential for any scientific attack on personnel problems, is universally regarded as desirable by public personnel administrators and, in a crude or refined form, is usually available for working purposes; this is in marked contrast to the commercial world, where the "job analysis" idea has as yet won only scant recognition. The best tests used even ten years ago are now eyed askance when they have not been discarded for more efficient measuring devices. In most other fields the advances, though less rapid, have been marked. The public, even though less interested in the merit system, ought in the opinion of the Bureau of Public Personnel Administration, to be made aware of the improvements in the handling of technical personnel problems.

CHANGES OF EMPLOYMENT

On the other hand for the past few years—and markedly during the past year—the professional service is attracting less and less of the high-grade men to the public service. Particularly is this true of engineers, doctors and nurses. New York City, for example, has not been able to supply the departments with engineers and the competition in this service has been practically *nil*. I believe the same thing has been true of Chicago, and Philadelphia has been having trouble for some years with

recruiting the proper caliber of men for these services.

The New York Civil Service Reform Association celebrated the 50th Anniversary of its founding on May 10 in conjunction with the 46th annual meeting of the National Civil Service Reform League, of which latter George McAneny was elected president in succession to Professor Thomas W. Swan of Yale appointed a United States Judge.

At the 20th annual meeting of the Assembly of Civil Service Commissions held in Buffalo, September 13-16, Frederick W. Smith, Chief Examiner of the Detroit City Commission, was elected President.

UNITED STATES BUREAU OF EFFICIENCY

This independent Government establishment was originally organized as a division of the Civil Service Commission in 1913. In 1916 it was made an independent establishment by the Act of Congress of February 28, 1916. The Chief of the Bureau is appointed by and reports directly to the President of the United States. This Bureau is supported by annual appropriations made by Congress. On July 1, 1927, the permanent staff of the Bureau consisted of the chief, the assistant chief, 36 investigators and accountants, 8 scientists, 21 clerks, 3 messengers, and 1 laboratory assistant, making a total force of 71 employees. It has on its rolls experts in accountancy, in administrative audit, in statistics, in industrial engineering, in chemistry, in labor saving devices, and in office management. It is the business of these experts to bring about better business methods and to reduce costs in the Government service.

Its functions as laid down in its organic act, were to establish and maintain a system of efficiency ratings for the classified civil service; to investigate the needs of the several departments and independent establishments of the Government in respect to personnel; and to investigate the application of statistical and other work and methods of business in the various branches of the Government service. Further, the Bureau

upon request makes studies of office organization and assists in the installation of new systems in the Federal service. It also conducts investigations for Congress or for Congressional committees.

During the past year the Bureau made studies of the State, Treasury, War, Post Office, Interior, Justice, Agriculture, and Commerce Departments, and for the Government of the District of Columbia. It also conducted studies for the Committee on Appropriations and for the Committee on the District of Columbia of the House of Representatives.

DISTRICT OF COLUMBIA SCHOOLS

A survey of the public school system of the District of Columbia is being made for the committees of the Senate and House of Representatives. This survey is comprehensive in scope covering all phases of the organization and administration of the school system. A detailed study of teacher needs is being made, which involves a determination of reasonable student loads and the extent to which special-teacher activities should be carried. A thorough examination of the building needs is also being made, which covers the condition and adequacy of the buildings now in use and the need for buildings in the future. The types of buildings which are at present being erected under the five-year building program are being studied as to their adaptability to present-day educational demands. The organization and methods of the business department of the schools are also being examined into, as well as the departments charged with the operation and maintenance of school buildings.

PAPER CURRENCY

Problems connected with the paper currency of the country have been under investigation by the Bureau of Efficiency for two and a half years, in cooperation with the Bureau of Standards and the Bureau of Engraving and Printing. This study has resulted already in increasing the life of one-dollar bills by means of an improvement in the paper on which the bills are printed. Experi-

mental work is under way on various processes in the production of the bills and on the recovery of paper pulp from redeemed currency.

At the request of the Treasury, the Bureau collected and collated the information needed by the committee that developed the proposed new paper currency.

INDEX OF ACTIVITIES

To prevent duplication of work in the Government service the Bureau has built up an index of all major activities of the United States Government from 1913 to date. This index consists of about 50,000 cards arranged alphabetically by subjects. It forms a storehouse of information, and in addition to serving a useful purpose in preventing duplication of work in the Government, it is used as a means of answering hundreds of inquiries coming to the Bureau from Government officials and private citizens pertaining to the activities of the executive departments and independent establishments. This index is a reference index only, from which to refer the inquirer to the proper office or offices for firsthand information in the particular field in which he may be interested.

The bureau has continued to serve the executive departments and independent establishments in an advisory capacity on questions relating to uniform efficiency ratings for employees in the classified departmental service. During the year it has also detailed a number of its staff members to the Personnel Classification Board, which organization is charged with the duty of classifying the various Government positions.

CLASSIFICATION

The Chief of the Bureau is one of the members ex officio of the Personnel Classification Board, established by Section 3 of the Act of Congress approved March 4, 1923, providing for the classification of civilian positions within the District of Columbia, including all positions under the Government of the District of Columbia and in the field service of the Federal Government. He is also a member of the Board of Actuaries authorized by

III. THE NATIONAL GOVERNMENT

Section 16 of the Act of Congress approved May 22, 1920, for the retirement of employees in the classified civil service.

PERSONNEL OF THE JUDICIARY

By WILLIAM M. SCHUYLER

ASSOCIATE EDITOR, THE AMERICAN YEAR BOOK

SUPREME COURT OF THE UNITED STATES

William Howard Taft (Ohio), Chief Justice, appointed 1921.

Oliver Wendell Holmes (Massachusetts), appointed 1902.

Willis Van Devanter (Wyoming), appointed 1910.

James Clark McReynolds (Tennessee), appointed 1914.

Louis Dembitz Brandeis (Massachusetts), appointed 1916.

George Sutherland (Utah), appointed 1922.

Pierce Butler (Minnesota), appointed 1922.

Edward Terry Sanford (Tennessee), appointed 1923.

Harlan F. Stone (New York), appointed 1925.

Officers of the Supreme Court:

Clerk.—Charles Elmore Cropley.

Deputy Clerks. — Philander R. Stensbury, Reginald C. Dilli.

Marshal.—Frank Key Green.

Reported.—Ernest Knaebel.

CIRCUIT COURTS OF APPEALS OF THE UNITED STATES

First Circuit.—Mr. Justice Holmes; George Hutchins Bingham (New Hampshire); Charles F. Johnson (Maine); George W. Anderson (Massachusetts).

Second Circuit.—Mr. Justice Stone; Martin T. Manton (New York); Learned Hand (New York); Thomas W. Swan (Connecticut); Augustus Hand (New York).

Third Circuit.—Mr. Justice Brandeis; Joseph Buffington (Pennsylvania); J. Warren Davis (New Jersey); Victor B. Woolley (Delaware).

Fourth Circuit.—Mr. Chief Justice Taft; Edmund Waddill, Jr. (Virginia); John J. Parker (North Carolina); Elliott Northcott (West Virginia).

Fifth Circuit.—Mr. Justice Sanford; Richard W. Walker (Louisiana); Nathan P. Bryan (Florida); Rufus E. Foster (Louisiana).

Sixth Circuit.—Mr. Justice McReynolds; Arthur C. Denison (Michigan); Maurice H. Donahue (Ohio); Charles H. Moorman (Kentucky).

Seventh Circuit.—Mr. Justice Butler; George T. Page (Illinois); Julian W. Mack (Illinois); Samuel Alschuler (Illinois); Albert B. Anderson (Indiana); Evan A. Evans (Wisconsin).

Eighth Circuit.—Mr. Justice Van Devanter; Walter H. Sanborn (Minnesota); Robert E. Lewis (Colorado); William S. Kenyon (Iowa); Kimbrough Stone (Missouri); Wilbur F. Booth (Minnesota); A. S. Van Valkenburgh (Missouri).

Ninth Circuit.—Mr. Justice Sutherland; William B. Gilbert (Oregon); Frank H. Rudkin (Washington); William H. Hunt (California); Frank S. Dietrich (Idaho).

UNITED STATES COURT OF CUSTOMS APPEALS

William J. Graham (Illinois), presiding judge, appointed 1924.

James Francis Smith (California), appointed 1910.

Orion Metcalf Barber (Vermont), appointed 1910.

Oscar E. Bland (Indiana), appointed 1923.

Charles Sherrod Hatfield (Ohio), appointed 1923.

COURT OF APPEALS OF THE DISTRICT OF COLUMBIA

George E. Martin, Chief Justice.

Charles H. Robb.

Josiah A. Van Orsdel.

COURT OF CLAIMS OF THE UNITED STATES

Edward Kernan Campbell (Alabama), Chief Justice, appointed 1913.

FEDERAL JUDICIAL PROSECUTIONS OF OIL CASES

Fenton Whitlock Booth (Illinois), appointed 1905.

James Hay (Virginia), appointed 1916.

McKenzie Moss (Kentucky), appointed 1926.

SUPREME COURT OF THE DISTRICT OF COLUMBIA

Walter I. McCoy, Chief Justice.

Wendell P. Stafford.

Frederick L. Siddons.

William Hitz.

Jennings Bailey.

Adolph A. Hoehling.

UNITED STATES CUSTOMS COURT

Israel F. Fischer, Chief Justice.

Byron S. Waite.

Charles P. McClelland.

Jerry B. Sullivan.

George Stewart Brown.

William Charles Adamson.

George E. Weller.

George Morley Young.

UNITED STATES MARSHAL'S OFFICE

United States Marshal.—Edgar C. Snyder.

Chief Deputy Marshal.—Stephen B. Callahan.

UNITED STATES ATTORNEY'S OFFICE

United States Attorney.—Peyton Gordon.

Assistants.—Leo A. Rover, Ralph Given, Raymond Neudecker, James J. O'Leary, John J. Fihelly, David A. Hart, Rebekah S. Greathouse, Harold W. Orcutt, William H. Collins, M. Pearl McCall, Albert A. Stern, Neil Burkinshaw, John B. Williams, Thomas L. Jones, Joseph V. Connally, Joseph C. Bruce, Walter M. Shea, Renah F. Camalier, Charles B. Murray.

FEDERAL JUDICIAL PROSECUTIONS OF OIL CASES

BY JOHN A. KROUT

PROFESSOR, COLUMBIA UNIVERSITY

OIL LEASES

The interminable legal battles connected with the leases to government oil lands negotiated in 1922 and 1923 by Secretary of Interior Albert B. Fall still raged in various Federal courts during the year 1927. The civil suits started by the United States Government to cancel several leases because of fraud had reached the Supreme Court after decisions and appeals from the district and circuit courts. In a unanimous decision handed down on February 28 the highest tribunal in the country branded the transactions between Albert B. Fall and Edward L. Doheny covering the lease of the Elk Hills Naval Oil Reserve and the construction of the naval oil station at Pearl Harbor as manifestly fraudulent and corrupt. The Court ordered the leases to be cancelled and refused to grant the contention of the Doheny interests that they should be reimbursed for the money expended by them under the arrangements of the

contract.

On October 10 the Supreme Court affirmed the decision of the Circuit Court of Appeals, Eighth Circuit, which held that the lease and agreement between the United States and the Mammoth Oil Company relating to the Teapot Dome Reserve were obtained by fraud. In its opinion the Supreme Court held that the evidence proved Albert B. Fall to be a "faithless public officer." The decision ordered the cancellation of the lease and all agreements under it with the Sinclair interests who controlled the Mammoth Oil Company. In accordance with the decision and the confirmatory opinions Judge Blake Kennedy of the United States District Court at Cheyenne, Wyoming, signed a decree on December 29 returning the Teapot Dome Reserve to the Navy Department. Secretary Wilbur estimated that the return of the property would mean a net gain for the Government of \$5,300,000 exclusive of property improvements.

III. THE NATIONAL GOVERNMENT

CRIMINAL CONSPIRACY CASES

The civil suits which were ultimately decided in favor of the United States represented but one side of the Government's case against Albert B. Fall and the oil companies with which he had reached agreements while he was Secretary of Interior. Two indictments were returned by the grand jury in the District of Columbia in 1925; the first charged Albert B. Fall, Edward L. Doheny and others with conspiracy to defraud the United States Government, while the second preferred the same charges against Albert B. Fall and Harry F. Sinclair. The trial resulting from the first indictment ended in a victory for the defendants, the jury apparently deciding that the special attorneys for the Government had failed to present sufficient evidence to support their theory of criminal conspiracy to defraud. In October, 1927, Harry F. Sinclair and Albert B. Fall were brought to trial on similar charges connected with the leasing of the Teapot Dome Naval Oil Reserve. The evidence was presented to a jury in the criminal division of the Supreme Court of the District of Columbia with Justice Frederick L. Siddons presiding, Attorneys Atlee Pomereene and Owen J. Roberts being special counsel for the prosecution.

TAMPERING WITH THE JURY

They were well along with the case when the trial came to a sensational and unexpected close. On the basis of affidavits, presented by the prosecuting attorneys, charging "close, intimate, objectionable and improper surveillance" of the jurors by the William J. Burns Detective Agency of New York, Justice Siddons ordered a mistrial on November 2.

Without delay the Grand Jury of the District began a vigorous investigation of the Government's charges of jury tampering. The attorneys for the United States contended that the "shadowing" done by agents of the Burns Agency had been ordered and paid for by Harry F. Sinclair and his associates. It was the opinion of the government counsel that this surveillance constituted an attempt to obstruct justice through illegal in-

terference with the jury members. During the course of the hearings before the Grand Jury, Justice Siddons announced on November 15 that he had appointed a committee to inquire whether there had been contempt of court in connection with the Fall-Sinclair trial. One week later, on the basis of the committee's recommendation, the following persons were cited for criminal contempt of the Supreme Court of the District of Columbia: Harry F. Sinclair, Sheldon Clark, Henry Mason Day, all associated with the Sinclair oil interests, and William J. Burns, W. Sherman Burns, Charles L. Veitsch, connected with the Burns Detective Agency. The six men cited were arraigned before Justice Siddons on December 4. The hearings continued until December 23 and were then postponed to January 2.

PRESENTMENT

In the meantime the Grand Jury considered the evidence in its possession, reaching a decision on December 30, when it returned a presentment against Harry F. Sinclair, William J. Burns, W. Sherman Burns, Sheldon Clark, Henry Mason Day, Charles G. Ruddy, and Frank J. O'Reilly. The presentment charged the men named with conspiracy to obstruct justice, and indicated that the Grand Jury believed the men should be formally indicted. No action was immediately taken, as District Attorney Payton Gordon insisted that the contempt hearings should be carried through to a conclusion before another phase of the case was considered. The Fall-Sinclair conspiracy case, which had been the occasion for the sordid attempt to interfere with the administration of justice, was scheduled for a retrial on January 16, 1928.

CONTEMPT PROCEEDINGS

Another phase of the cases grew out of the refusal of certain witnesses to testify before the senate investigating committee which first inquired into the nature of the oil leases. Harry F. Sinclair was found guilty of contempt by a jury in the Supreme Court of the District of Columbia on March 16, 1927, for re-

fusing to answer questions put to him three years before by the Walsh committee of the Senate. On March 31 a motion for a new trial was denied, but Sinclair's attorneys found legal technicalities which prevented the imposition of an immediate penalty.

Announcement was made by attor-

neys for the Doheny interests during the year that Congress would be requested to appropriate sufficient funds to reimburse the companies for their expenditures in connection with the Elk Hills lease in California and the storage facilities at Pearl Harbor, Hawaii.

THE SUPREME COURT AND CONSTITUTIONAL LAW

BY HOWARD LEE MCBAIN

EATON PROFESSOR OF CONSTITUTIONAL LAW, COLUMBIA UNIVERSITY

PRESIDENT'S POWER OF REMOVAL

Court Settles Point.—Perhaps the most noteworthy case decided by the Supreme Court in the 1926-27 term was that which declared that the President's power to remove officers whom he appoints by and with the advice and consent of the Senate cannot be restricted by Congress. (*Myers v. the United States*, 272 U. S. 52.) This question was moot in the first Congress which met under the Constitution in 1789. It is almost incredible that one hundred and thirty-seven years elapsed before the point was definitively settled by the Supreme Court.

President's Right Unlimited.—The President's unlimited power of removal is derived by the court from his duty to see that the laws are faithfully executed. The Myers case concerned the power of the President to remove a local postmaster without the consent of the Senate, which was required by law. But the court went out of its way to express the view that this power in the President is all comprehensive. The statutes provide, for example, that the members of most of the great commissions, such as the Interstate Commerce and Federal Trade Commissions, shall hold office for limited terms and may be removed only for specified causes. By the decision in *Myers v. The United States*, however, such limitations are swept out of the statute books. The decision unquestionably vastly expands the President's legal power of removal. It is open to question, however, whether it will have any very important political or ad-

ministrative consequences.

PERSONAL RIGHTS AS AGAINST THE UNITED STATES

Senate's Power to Investigate.—Almost from the beginning of our history committees of each house of Congress have been conducting investigations. To that end they have been compelling the attendance of witnesses and the giving of testimony. Out of this long practice several important cases have considered the limitations under which these committees must conduct their inquiries. Not until 1927, however, was it expressly determined that a legislative committee might compel the attendance of witnesses where the inquiry is solely for the purpose of gathering information that might lead to legislative enactments. (*McGrain v. Daugherty*, 273 U. S. 135.)

Daugherty Case.—Mal Daugherty refused to respond to a summons from a senatorial committee empowered to investigate the conduct of the Department of Justice. He was declared to be in contempt of the Senate and the court sustained this declaration. Nor is it necessary that the resolution authorizing the inquiry should in terms avow that it is intended to be in aid of legislation. An investigation of the Department of Justice, said the court, was plainly a subject from which legislation could flow. The court was careful, however, to reiterate the rule laid down in previous cases that "a witness may rightfully refuse to answer where the bounds of the power are exceeded or the questions are not pertinent to the inquiry."

III. THE NATIONAL GOVERNMENT

Power to Regulate Private Schools.—The Territory of Hawaii passed an elaborate act subjecting private foreign language schools to drastic public control. The act was held void. (*Farrington v. Tokushige*, 273 U. S. 284.) Said the court: "Enforcement of the act probably would destroy most, if not all of them; and certainly it would deprive parents of fair opportunity to procure for their children the instruction which they think is important and we cannot say is harmful." The court recognized the somewhat difficult situation existing in Hawaii by reason of the large Japanese population. It nevertheless applied, as to a territory exclusively under the control of Congress, the same rule that was applied to the Nebraska law which forbade the teaching of German in private schools and the Oregon law which in effect abolished all the private schools.

Rights of Aliens.—In *United States v. Chemical Foundation* (272 U. S. 1), the Court reiterated the rule that "there is no constitutional prohibition against the confiscation of enemy properties." In *U. S. ex rel Vajtauer v. Commissioner of Immigration* (273 U. S. 103), the Court applied the familiar rule that "deportation without a fair hearing or on charges supported by no evidence is a denial of due process . . . But a want of due process is not established by showing merely that the decision is erroneous . . . or that incompetent evidence was received and considered. . . . In habeas corpus proceedings it is sufficient that there was some evidence from which the conclusion of the administrative tribunal could be deduced and that it committed no error so flagrant as to convince the court of the essential unfairness of the trial." The court did not pass upon the provision of the statute which places the burden of proof upon an alien to show that he entered the United States lawfully. That was unnecessary since a review of the evidence convinced the court that there was at any rate some evidence supporting the deportation order.

PERSONAL RIGHTS AGAINST THE STATES

Freedom of Speech.—As a result of the rule laid down in the *Gitlow* case in 1926 to the effect that guarantee of due process contained in the Fourteenth Amendment includes a guarantee of freedom of speech, the court had before it the constitutionality of the criminal syndicalism statutes of California and of Kansas. The California Act was sustained as construed and applied in one case by the California courts and in another by a lower United States court. (*Whitney v. California*, 274 U. S. 357 and *Burns v. the United States*, 274 U. S. 328.) In the *Whitney* case the court said: "By enacting the provisions of the Syndicalism Act the state has declared, through its legislative body, that to knowingly be or become a member of or assist in organizing an association to advocate, teach, or aid and abet the commission of crimes or unlawful acts of force, violence, or terrorism as a means of accomplishing industrial or political changes, involve such danger to the public peace and the security of the state, that these acts should be penalized in the exercise of its police power. . . . We cannot hold that as here applied, the act is an unreasonable or arbitrary exercise of the police power of the state."

In the *Burns* case the conviction was of a member of the I. W. W. where the evidence showed that this organization advocated sabotage. Membership in an organization advocating sabotage was penalized by the statute. In terms the Kansas statute was almost identical with that of California. It had been construed by the Kansas court to warrant the conviction of one who secured membership in an organization which was a part of the I. W. W. The evidence that was introduced did not show, however, that the organization advocated crime, criminal syndicalism, sabotage or any other unlawful act. As thus construed and applied by the state court the United States Supreme Court held the act void as a deprivation of liberty without due process of law.

Price Fixing.—The New York law which prohibited the resale of theatre tickets by brokers at an advance of more than fifty cents on the box office price was held void on the ground that theatres were not “a business affected with a public interest.” (*Tyson & Bro. v. Banton*, 273 U. S. 418.) Decision was by a five to four vote. The majority discussed the question as if the law had attempted to regulate the price of theatre tickets. This, as the minority pointed out, was not what the law did. A theatre owner or producer might charge whatever he pleased. It was only the broker whose profits were limited.

With three judges recording their dissent, an act of Minnesota which prevented any person or corporation from purchasing milk or cream at a higher price in one locality than the price paid in another locality was declared void by somewhat similar course of reasoning. The statute was intended to prevent big buyers from crushing competition by paying excessive prices wherever there was local competition with them. “Enforcement of the statute,” said the court, “would amount to fixing the price at which the plaintiff in error may buy, since one purchase would establish this for all points, without regard to ordinary trade conditions.” This price fixing of a business not affected with a public interest amounted to a deprivation of property without due process of law. (*Fairmont Cream Co. v. Minnesota*, 71 L. ed., 599.)

Zoning.—After all the disagreement among state courts in respect of the power of cities to enact comprehensive zoning ordinances in which the use of private property is severely restricted, usually under elaborate classifications and definitions, a case involving such an ordinance finally reached the Supreme Court. (*Euclid v. Ambler Realty Co.*, 272 U. S. 365.) The court was asked to enjoin generally the enforcement of the ordinance. This the court declined to do and put its unmistakable stamp of approval upon the validity of such ordinances. The court did not mention the stabilization of

realty values, which is manifestly one of the objects aimed at, but was content to rest the judgment of validity upon the usual subjects of the police power. It was asserted, without too close scrutiny, that such ordinances are in the interest of promoting the public health, safety, etc. The court was careful, however, to safeguard the broad rule of the case.

In *Gorrie v. Fox* (71 L. ed., 773), the court likewise upheld generally the constitutionality of setback or building lines. This is a subject also in respect of which there has been wide disagreement among the state courts. The validity of such ordinances was sustained on the general authority of the Euclid zoning case. (See also *Zahn v. Board of Public Works*, 274 U. S. 325.)

Equal Protection for Aliens.—An ordinance forbidding the granting of poolroom licenses to aliens does not deny the equal protection of the laws. (*Ohio ex rel Clarke v. Deckebach*, 274 U. S. 387.) “Some latitude must be allowed for the legislative appraisalment of local conditions . . . and for the legislative choice of methods for controlling an apprehended evil. It was competent for the city to make such a choice, not shown to be irrational, by excluding from the conduct of a dubious business an entire class rather than its objectionable members selected by more empirical methods.”

Sterilization of Mental Defectives.—A statute of Virginia which under congressional safeguards provided for the sterilization of mental defectives was sustained. (*Buck v. Bell*, 274 U. S. 208.) With his usual pungency Mr. Justice Holmes, speaking for the court, said: “We have seen more than once that the public welfare may call upon the best citizens for their lives. It would be strange if it could not call upon those who already sap the strength of the state for these lesser sacrifices, often not felt to be such by those concerned, in order to prevent our being swamped with incompetence. It is better for all the world, if instead of waiting to execute degenerate offspring for crime, or to let them starve for their imbecility, society

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can prevent those who are manifestly unfit from continuing their kind."

Equal Protection for Foreign Corporations.—If the laws of a state permit a domestic corporation to be sued only in the county in which it has a place of business or in which its chief officer resides, the state may not provide that a foreign corporation may be sued in any county in the state. (*Power Mfg. Co. v. Saunders*, 71 L. ed. 807.) Such a provision is a denial of equal protection, even though the law was in existence at the time when the foreign corporation received its permit to do business in the state. In the judgment of a majority of the court, not shared by Justices Holmes and Brandeis, this requirement as to foreign corporations was essentially arbitrary.

Non-Resident Motorcars.—The Supreme Court had previously held that a state might require a non-resident, as a condition of driving his motorcar in the state, to appoint a state officer as his agent for the purpose of receiving any process that might be issued by a court. Massachusetts, realizing the annoyance of requiring a definite act of appointment, declared by law that the use of the highways of that state by a non-resident should be deemed equivalent to appointment of a state officer to receive such processes. The law also required service upon a non-resident by registered mail. It was held that the difference between a formal and an implied appointment is not substantial and that in consequence there was here no denial of due process of law. (*Hess v. Pawloski*, 274 U. S. 352.)

Equal Protection and Medical Practice.—The exclusion of osteopaths from practice in a state or municipal hospital is not a denial of equal protection of the laws. (*Hayman v. Galveston*, 273 U. S. 380.) Neither is the requirement of a diploma from a dental school of good standing as a basis for obtaining a permit for the practice of dentistry. (*Graves v. Minnesota*, 272 U. S. 425.)

Negro Voting.—A statute of Texas which prohibited negroes from voting in Democratic primary elections was

held void as a denial of equal protection of the laws under the Fourteenth Amendment, rather than as being in conflict with the Fifteenth Amendment. The action brought was to recover damages from the judges of election who refused to permit a negro to vote. This action was sustained in a brief but sharp opinion. (*Nixon v. Herndon*, 273 U. S. 536.)

LIQUOR PROHIBITION LAWS

Padlocking.—In *Murphy v. the United States* (272 U. S. 630) it was held that the prosecution and acquittal of a person in a criminal action under the National Prohibition Act was no bar to a subsequent action upon the same evidence brought to enjoin and padlock his premises under another section of the same act. Nothing could bring into clearer light the questionable character of the injunction proceedings authorized by the act. In the criminal action the accused was acquitted by a jury. In the so-called "civil" action he was in effect "convicted" by a single judge sitting in equity.

Forfeiture of Motorcar.—When a motorcar is forfeited under the National Prohibition Act the interest, if any, of innocent parties in the car must be protected. The section of the revenue laws, however, which provides for the forfeiture of vehicles of transportation makes no provision for the protection of such innocent interests. Manifestly this protection of innocent interests is often a stumbling block in the way of accomplishing forfeiture. The Supreme Court now says that before the conviction of the accused driver his motor car may be forfeited under the revenue laws provided the revenue tax has not been paid upon the contraband liquor, which usually, of course, it has not. (*United States v. one Ford Coupe Automobile*, 272 U. S. 321.) If, however, this is not accomplished prior to conviction, the motorcar must be forfeited as prescribed by the National Prohibition Act. This being the state of the law it is time that it be remedied by Congressional action. (*Port Gardner Investment Company v. the United States*, 272 U. S. 564.)

Searches and Seizures.—Evidence secured by a wrongful search made by state officers with the participation of a federal officer cannot be offered in a federal prosecution of the accused. "We cannot avoid," said the Court, "the conclusion that the participation of the agent in the search was under cover of his federal office and that the search in substance and effect was a joint operation of the local and federal officers. In that view, so far as this inquiry is concerned, the effect is the same as though he had engaged in the undertaking as one exclusively his own . . . We do not question the right of the federal government to avail itself of evidence improperly seized from state officers operating entirely upon their own account. But the rule is otherwise when the federal government itself, through its agents acting as such, participates in the wrongful search and seizure." (*Byars v. the United States*, 273 U. S. 28.) The state warrant under which this search was made was in the opinion of the court clearly bad as tested by the fourth amendment and the laws of the United States.

The illegal destruction of liquor by federal prohibition officers who make a search with a valid warrant does not prevent offering in evidence a portion of the liquor which was seized. (*McGuire v. United States*, 273 U. S. 95.) "A criminal prosecution is more than a game in which the government may be checkmated and the game lost merely because its officers have not played according to rule."

In *Ford v. the United States* (273 U. S. 593), the court in a lengthy opinion liberally construed in favor of law enforcement the treaty between the United States and Great Britain in respect to the search and seizure of vessels suspected of smuggling liquor.

Judges Having Interest in Liquor Cases.—The laws of Ohio operated to give judges of inferior local courts, in addition to their salaries, substantial fees where persons were convicted and fined in liquor cases. Likewise, by extending the jurisdiction of each such inferior court to the entire coun-

try they stimulated small municipalities, especially those adjacent to large cities, to make these liquor cases financially profitable to the community. Such provisions of law were by the Supreme Court held to be a denial of due process. (*Tumey v. Ohio*, 273 U. S. 510.)

COMMERCE

State Burden on Foreign Commerce.—A law of the state of Pennsylvania which required all sellers of steamship tickets, other than railways or steamship companies, to take out a license, pay a small fee, and give a small bond, was held to be a "direct burden on commerce" which was beyond the power of the state to impose. (*Di Santo v. Pa.*, 273 U. S. 34.) Justices Brandeis, Holmes and Stone vigorously dissented.

Motorcars in Interstate Commerce.—It had heretofore been held that a state may not require an interstate carrier by motor vehicle to obtain a certificate of convenience and necessity issuable at the discretion of a state utilities commission. In *Clark v. Poor* (71 L. ed. 776) it was held, however, that a state may compel such carriers to obtain a certificate involving the exercise of no discretion by the commission, and to pay an extra tax for making the highways of the state their place of business. The court found that there was no discrimination against interstate commerce; intrastate carriers were subjected to similar control. And the tax was not so large as to obstruct such commerce.

An act of Massachusetts required a local license and a certificate of convenience and necessity for the operation of motor busses, except where the carriage was exclusively interstate. Where a corporation was engaged in both interstate and intrastate carriage of passengers and where it was not even shown that their interstate business was in any degree dependent upon their local business, such a requirement was sustained. (*Interstate Busses Corporation v. Holyoke Railway Co.*, 273 U. S. 45.)

Intrastate Rates.—A confiscatory rate on saw logs in intrastate com-

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merce was prescribed by the Public Utilities Commission of Idaho on the theory that the shipment of logs to the mills within the state was "only an incident to the traffic" of transporting logs and lumber. The railroads themselves had formerly hauled logs at a loss in order to encourage the lumber business generally. The Supreme Court declared that a confiscatory intrastate rate could not be sustained upon any such ground. Such rate must stand alone and not be considered in connection with the more profitable interstate lumber rates. (*Chicago, Milwaukee and St. Paul Rd. v. Public Utilities Commission*, 274 U. S. 341.) The order of a state public service commission increasing the rate on electric current supplied to another company across a state line is void as a burden upon interstate commerce. (*Public Utilities Commission of R. I. v. Attleboro Steam & Electric Co.*, 273 U. S. 83.)

Sherman Act.—The enforcement of the stonecutters' union rule forbidding members to handle stone fabricated by non-members was held to be a violation of the Sherman Antitrust Act. (*Bedford Cut Stone Co. v. Journeymen Stonecutters Assn.*, 273 U. S. 702.) The ultimate purpose of the rule was, of course, to bring about the employment of union labor by the quarriers and fabricators of stone. Its consequence, however, was to curtail the demand for such stone in interstate commerce. Consequently the court sustained the injunction against the union.

In *U. S. v. Trenton Potteries Co.*, 273 U. S. 392, the Supreme Court made clear, what should have been clear before, that the rule of reasonableness laid down in the famous *Standard Oil* and *American Tobacco Company* cases does not mean that agreements to fix or maintain prices are not unreasonable if the prices are not unreasonable. Any price fixing agreement is an unreasonable restriction upon interstate commerce within the meaning of the Sherman Act, whether the price is or is not reasonable.

Interstate Commerce Commission.—Alleged errors in an order of the Interstate Commerce Commission

which, under the Valuation Act of 1913, merely fixed the value of a railroad were held to be not subject to review and correction by the court. (*U. S. v. Los Angeles and Salt Lake R.R. Co.*, 273 U. S. 299.) Of course if the Commission thereafter fixed a rate upon the basis of this valuation, alleged errors would be subject to judicial review.

Congress has conferred upon the Commission complete power over locomotive equipment. The court expresses the view that this operates to void all state laws regulating such equipment, even though such laws are not in conflict with any order of the Commission. (*Napier v. Atlantic Coast Line*, 272 U. S. 605.)

STATE TAXATION

Inheritance Taxes.—Where a trustee and a trust fund are outside of the state of the decedent that state has no power to impose an inheritance tax, even though the donee has the power by will to dispose of the fund. (*Wachovia Bank & Trust Co. v. Doughton*, 272 U. S. 579.) As pointed out by Mr. Justice Holmes, it is difficult to reconcile this decision with *Bulletin v. Wisconsin* (240 U. S. 265), where it was held that a fund given in trust for the donor's widow and children, reserving to the donor a general power of revocation and the disposition of the income during his life, was subject to an inheritance tax in the state of the donor's domicile, although the trustee and the trust fund were outside of the jurisdiction.

The attempt of the state of Florida to enjoin the Secretary of the Treasury from collecting federal inheritance taxes on the ground that the Florida constitution prohibits inheritance taxes and that the federal law operates to withdraw property from Florida was among the most amusing, if unsuccessful, actions of recent years. (*Florida v. Mellon*, 273 U. S. 12.)

Taxation of Foreign Corporations.—A tax on the net receipts of a foreign insurance company, which was not assessed like the tax on the personal property of domestic corporations, including a tax on net receipts,

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is not a privilege tax if levied after the corporation was admitted to do business in the state. It is, on the contrary, a discriminatory revenue act and a denial of equal protection of the laws. (*Hanover Fire Ins. Co. v. Carr*, 272 U. S. 494.)

Special Assessments.—A special assessment against a railway company which is based upon the value of its personal as well as its real property, while such assessment is laid only upon the real property of others, and which in addition to this element of inequality, is much larger than any possible benefit to the property of the railway, is a deprivation of property without due process of law and a denial of equal protection. (*Road Improvement District No. 1 v. Mo. Pac. R.R. Co.*, 274 U. S. 188.)

CONTRACT OBLIGATIONS

Motor Loads on Highways.—A state has the power to regulate the weight of loads that may be driven by motorcars on highways constructed

in part by federal aid. (*Morris v. Doby*, 274 U. S. 135.) There is nothing in the laws of Congress to prevent this. And there is certainly nothing in the nature of a contract between the state and the national government to the effect that the state will continue to permit the weight which was allowed at the time the state and national governments agreed upon the construction of the road.

Unlimited Franchises.—In *Ohio Public Service Commission v. Ohio* (274 U. S. 15) the court reaffirms the view that under former Ohio laws the grant of a franchise without any fixed term was a grant for an unlimited time and is not subject to revocation. Where a franchise ordinance enacted under the authority of such laws referred to the "successors and assigns" of the grantee a subsequent law requiring municipal consent for a transfer of a franchise is a law which has the effect of impairing the obligation of contract.

COGNATE SOCIETIES

AMERICAN ACADEMY OF POLITICAL AND SOCIAL SCIENCE.—3622 Locust St., Philadelphia, Pa.

AMERICAN BAR ASSOCIATION.

AMERICAN CONSTITUTIONAL LEAGUE.—27 William St., New York, N. Y.

AMERICAN DEFENSE SOCIETY, INC.—154 Nassau St., New York, N. Y.

AMERICAN POLITICAL SCIENCE ASSOCIATION.—Madison, Wis.

AMERICAN RIGHTS LEAGUE.—2 W. 45th St., New York, N. Y.

CITIZENS' LIBERTY LEAGUE, INC.—289 Lenox Ave., New York, N. Y.

CIVIL SERVICE FORUM.—2129 Cortelyou Road, Brooklyn, N. Y.

COMMERCIAL LAW LEAGUE OF AMERICA.—108 S. La Salle St., Chicago, Ill.

HONEST BALLOT ASSOCIATION, INC.—120 Broadway, New York, N. Y.

LEAGUE FOR AMERICAN CITIZENSHIP,

INC.—342 Madison Ave., New York, N. Y.

LEAGUE FOR POLITICAL EDUCATION.—113 W. 43rd St., New York, N. Y.

LEAGUE FOR PUBLIC DISCUSSION.—500 Fifth Ave., New York, N. Y.

NATIONAL ASSOCIATION OF LEGAL AID ORGANIZATIONS.—133 S. 12th St., Philadelphia, Pa.

NATIONAL ASSOCIATION FOR CONSTITUTIONAL GOVERNMENT.—716 Colorado Building, Washington, D. C.

NATIONAL CIVIL SERVICE REFORM LEAGUE.—8 W. 40th St., New York, N. Y.

NATIONAL INSTITUTE OF PUBLIC ADMINISTRATION.—261 Broadway, New York, N. Y.

NATIONAL STATE ASSOCIATION.—757 Drexel Bldg., Philadelphia, Pa.

VOTERS' EDUCATIONAL LEAGUE.—524 First Ave., New York, N. Y.

DIVISION IV

STATE GOVERNMENT

NATIONAL AND INTERSTATE RELATIONS OF STATES

BY JOHN M. MATHEWS
PROFESSOR, UNIVERSITY OF ILLINOIS

State Rights.—With reference to the relation of the states to the National Government, there is a widespread fear on the part of the supporters of state rights that these rights are seriously menaced unless the encroachments of the National Government are checked. In their messages to the various legislative sessions of 1927, such views were expressed by several governors, notably Governor Ritchie of Maryland and Governor Christiansen of Minnesota. Along the same lines and more pungent is the more recent statement of officers of the American Medical Association criticising the administration of the Sheppard-Towner act for the promotion of maternity and infant welfare on the ground that "the act seems to have been intended only to provide funds through which Federal officers could dominate health activities in the states immediately relating to maternal and infant hygiene."

National and State Contacts.—State and National activities have important points of contact in connection with such matters as taxation, prohibition enforcement, and navigable waters. The National Council of State Legislatures met in Washington in November for the purpose of appearing before the ways and means committee of the House of Representatives to ask for the repeal of the Federal inheritance tax, on the ground that the provision for an 80 per cent deduction for states which have an inheritance tax is an effort on the part of Congress to dictate

to the states regarding their system of taxes.

Volstead Enforcement.—In December the Supreme Court of the United States held that state police officers cannot make arrests solely to aid the United States in the enforcement of the Volstead Act unless they first procure search warrants. The case came up from New York State which is peculiar in that it does not have a state prohibition enforcement law.

Chicago River Case.—In November, Master in Chancery Charles E. Hughes filed with the Supreme Court of the United States a report sustaining the right of the Chicago Sanitary District to divert water from Lake Michigan. The report admits, however, that such diversion appreciably lowers the level of the lake, and even if the report is sustained by the Court, the matter may still be fought out in Congress.

Interstate Relations.—Two joint enterprises with reference to the utilization of the waters of boundary rivers are still pending. These are the three-state compact between New York, Pennsylvania, and New Jersey with reference to the use of the waters of the Delaware River and the seven-state compact with reference to the Colorado River. The latter has never been ratified by Arizona. The legal and political difficulties involved in carrying out these intricate interstate projects seem very great.

In December the Supreme Court of the United States handed down a decision in the long-standing boundary

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dispute between Texas and New Mexico to the effect that the boundary should be put on the line where the Rio Grande River ran in 1850. This gave to Texas the disputed area amounting to about 25,000 acres.

CHANGES IN ELECTORAL LAWS

BY CHARLES KETTLEBOROUGH

DIRECTOR, INDIANA LEGISLATIVE BUREAU

VOTERS

Registration or Enrollment.—The only notable change made in the registration or enrollment laws was the outright repeal of the law in Indiana. The tendency to compile and maintain permanent registration lists is still noticeable.

Arizona enacted a law requiring a biennial registration of voters between the first Monday in May and the 30th day preceding the election. In Illinois voters in cities of less than 200,000 are required to register every four years instead of every two years as formerly. In Missouri registration is required in counties of 100,000 to 150,000 for two days before each election.

Forms of permanent registration were provided or continued with some modifications in Iowa, Kansas, Minnesota, Nebraska, Nevada, New Jersey and in various cities.

In Minnesota there will be a general registration of all voters in 1927; thereafter the list is to be kept as a permanent enrollment. Any permanent registration list must provide a method of enrolling voters whose names do not appear thereon and purging the lists of the names of deceased and disfranchised voters and those who have moved. Methods substantially identical are provided in all permanent registration states.

Some diversity is shown relative to the registration unit, the tendency being to establish larger units for the obvious purpose of reducing expense. For instance in Arizona, voters register with a justice of the peace or the county recorder. In Massachusetts, if a voter wishes to change his party enrollment, he is required to appear in person before the city or town clerk.

Absent Voters.—Aside from the outright repeal of the absent voters law in Indiana, no marked or significant changes were made in the absent voters laws. In Colorado the absent voter is required to apply to the clerk in person for a ballot, mark it and return it to the clerk. Nevada exempts Federal and State officers and their immediate families from registering before receiving absent voters ballots.

Voting Machines.—Arizona authorized the use of voting machines in all elections and prescribed the method of operation, and Oklahoma authorized the use of machines in Oklahoma county.

POPULAR VOTES

Initiative and Referendum.—In Arkansas a law was passed prescribing the date and place of filing initiative and referendum petitions, the manner of placing such questions on the ballot, the ordering of special elections in cases of emergency and the time of taking effect of initiated laws, and Montana made unimportant changes in the method of printing, binding and delivery of initiative and referendum petitions.

Recall.—In Arkansas, the number of signers of a recall petition in cities of the first class having the commission form of government was reduced from 35% to 25% of the vote cast, and the petition is filed with the county clerk instead of the city clerk. The Iowa law was restricted to apply only to the removal of elected and not to appointed officers.

CORRUPT PRACTICES

A few examples will show the trend of legislation. Arizona requires every person, firm, corporation, club, league or association which engages in po-

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litical propaganda to file a report of the same character as a campaign committee. Nebraska excludes money spent for newspaper advertising from the operation of the Corrupt Practices Act. New Hampshire requires all agents for candidates to register with the Secretary of State and to file an expense account after the primaries.

NOMINATIONS

Legislation on this subject continues to be multifarious, as shown by the following examples: Idaho prescribed a uniform method of declining nominations, applicable to all candidates. Iowa fixed the time for the withdrawal of candidates of minor parties nominated by conventions, and Maryland and Nebraska the time when certificates of nomination must be filed. Massachusetts restricted membership on political committees to enrolled members of the party electing such committee. Michigan provided for the election of delegates to the State convention by county conventions, in any county which adopts the system, either on petition of 1% of the qualified voters or on motion of the county board of supervisors and the approval of a majority of the voters of the county. New York provided for the election of delegates to the national convention either by the State committee or the State convention as may be prescribed by party rules. North Dakota changed the designation of an independent party ballot from "Non-Partisan" to "No Party." Texas changed the time of holding the State convention, and authorized any political party, through its executive committee, to prescribe the qualifications of its own members and determine who shall be eligible to vote and participate in such party. California includes Presidential electors under the law providing for independent nominations.

GENERAL ELECTIONS

California provided for the establishment of election return centers to facilitate the counting and announcement of the vote; all important offices and propositions on which early re-

turns are desirable are designated in advance and reports are made to the election return center as soon as 25 votes are counted and every 50 votes thereafter. Illinois and Oklahoma provided for printing the names of the candidates for President and Vice-President on the ballot either with or without the names of the Presidential electors, and Nebraska provides that each Presidential elector shall receive the combined vote cast for President and Vice-President. New York prohibits independent parties from selecting the name or any part of the name of an existing party and provides for the selection of an emblem where the petitioners fail to select one.

PRIMARIES

California provided that in any election in which two or more judges are to be elected for the same term, each candidate is given a number in the primary which is kept through the election and by which such candidate is designated; and when two or more candidates have such similar names as to be confusing, any such candidate may file a request to have a distinguishing number printed on the ballot with his name. Idaho, Maryland and Montana define a political party for the purpose of deciding what parties must nominate candidates by means of the primary. In Colorado, any candidate who receives 20% of the vote of the convention (instead of 10% as formerly) is entitled to have his name printed on the primary ballot, and voters are required to declare their party allegiance before voting at a primary. Massachusetts provided for non-partisan preliminary municipal elections in Holyoke and Leominster prior to the regular election. North Carolina repealed the law providing for preferential Presidential primaries. Oklahoma has provided that after filing of any nominating petition, a petition may be filed asking that the name be stricken off of the list because it is "frivolous" or "not made in good faith," and unless a counter petition be filed or a prescribed deposit be made, the name is stricken off.

Minor amendments made in the sev-

STATE LEGISLATURES AND LEGISLATION

eral primary laws include the date and place of filing primary election petitions and declarations; the form of primary ballots and declarations; the number of signers of petitions; the date of withdrawal of candidates; the time of closing the polls; filing objections to any person nominated; the date of the primary; recount of vote cast; authorizing the use of schoolhouses for primary elections; publication of election notices; prescribing the fees to be paid by candidates; the filling of vacancies where a party fails to nominate a candidate at the primary; sample ballots and election officials; declaring unopposed candidates nominated; the canvass of the vote; and the election of district delegates.

STATE LEGISLATURES AND LEGISLATION

BY JOHN M. MATHEWS

PROFESSOR, UNIVERSITY OF ILLINOIS

The National Council of State Legislatures has been formed to engage in activities of common interest to these bodies. It waged a campaign for the repeal of the Federal inheritance tax and proposes to consider other questions which may arise in the relations between the National and state governments.

The American Legislators' Association, which is allied with the American Bar Association, is attempting to formulate principles for the increase of legislative efficiency. It proposes to hold annual meetings and to maintain a permanent central office to act as a bureau of information and clearing house for legislators and legislative reference bureaus.

Organization and Procedure.—Certain improvements in legislative organization and procedure have been suggested during the year. In South Dakota the submission of a constitutional amendment for a unicameral legislature was opposed by an outgoing governor and approved by an incoming one. The governors of Massachusetts and South Carolina advocated the holding of biennial instead of annual sessions, while the Governor of Connecticut proposed the adoption of a form of the split session as found in California. That this form is not working altogether satisfactorily in the latter state is indicated by the suggestion of Governor Young of that state that the

introduction of mere "skeleton" bills during the first part of the session should be prohibited.

Governor Smith of New York favored extending the terms of senators to four years and of assemblymen to two years. He also recommended that the "constitution should be so amended as to provide that in the even-numbered years no legislation may be enacted except what is necessary to make provision for the support of the Government unless it is specifically recommended by message from the governor." The legislative committee of the Citizens' League of Cleveland, as a result of its observation of the Ohio session of 1927, recommended a reduction of the number of standing committees, the early introduction of all bills and the installation of an electric roll-call system.

Illinois Apportionment.—In Illinois the fight between Chicago and downstate over legislative reapportionment continued, but without decisive results. Two resolutions were passed in the Senate, one providing for a joint committee to draw up a plan of reapportionment, and the other proposing a constitutional amendment limiting Cook County to its present representation in the Senate, but providing representation according to population in the Lower House. Both resolutions met defeat in the Lower House.

IV. STATE GOVERNMENT

THE STATE EXECUTIVE

BY JOHN M. MATHEWS

PROFESSOR, UNIVERSITY OF ILLINOIS

Gubernatorial Term.—An increase of the governor's term from two to four years was favored by the governors of New York, South Dakota, Idaho, Kansas, and Nebraska. In New York a constitutional amendment for this purpose was submitted to the voters but was decisively defeated at the November election. The amendment was opposed by Governor Smith because of the provision inserted by the legislature placing the gubernatorial election in Presidential election years. This, he held, would confuse state and national issues and in his message to the legislative session of 1928 he recommended the immediate first passage of an amendment to the constitution providing for a four-year term for governor with the election in a year when there is no Presidential election. Similar propositions to extend the governor's term to four years in New Jersey and New Mexico were also defeated. They both provided for the election in Presidential years.

Governor and Departments.—Constitutional amendments adopted in New York at the November election provide that the governor shall be head of the executive department under the reorganization plan and raise his salary to \$25,000 a year. The control of the governor of New York over state finances is greatly increased through the adoption at the November election of a constitutional amendment embodying the executive budget plan. The amendment was drafted by the Hughes Reorganization Commission and provides that the governor shall prepare and present at the beginning of each session

of the legislature a complete budget plan for the state government. He has full authority to revise the expense estimates of the various executive department heads. If the legislature increases the items in the governor's budget, it must state the increases as separate amounts. The governor and department heads may be summoned to appear before either house to answer questions regarding the budgetary proposals.

Sacco-Vanzetti Case.—A situation which attracted world-wide attention was that which arose upon the conviction of Sacco and Vanzetti in a murder case in Massachusetts. Governor Fuller was urged by many persons to exercise his power of pardon, but declined to do so, partly on the strength of an adverse report made by a committee of investigation.

Oklahoma Incident.—Towards the end of the year a touch of Central American politics occurred in Oklahoma in the form of an attempt of the legislature to convene itself in special session for the purpose of impeaching and removing from office Governor Johnston. The governor was charged by the legislators with having been guilty of various irregularities. The chief justice of the state Supreme Court held that they had no power thus to convene themselves and the governor called out the state militia to prevent them from convening in the state capitol. The House nevertheless met in a hotel and voted impeachment charges. The Senate, however, finally decided to refuse to accept them, and then dispersed. Victory thus finally rested with the governor.

STATE ADMINISTRATION

THE STATE JUDICIARY

BY JOHN M. MATHEWS

PROFESSOR, UNIVERSITY OF ILLINOIS

Judicial Councils.—The movement for the establishment of state judicial councils made progress during 1927. Such bodies were created in Kansas, Connecticut and North Dakota. This makes a total of nine states which have adopted this plan. These bodies unify the state courts and make possible continuous observation of judicial administration and procedure. The effectiveness of these bodies naturally varies with the intelligence and courage of the personnel.

Perhaps the most active and effective state judicial councils are those in Massachusetts and California. In the latter state the council has undertaken extensive investigation of judicial conditions and the legislature has appropriated \$50,000 for its maintenance during the next two-year

period. As an echo of the notorious Sacco-Vanzetti case, the Massachusetts Council, in its annual report to the Governor, pointed out several causes for the inordinate delay in that case and made recommendations for certain changes in judicial procedure, such as that there should be allowed only one appeal in capital cases, and that there should be a greater limitation on motions for new trials.

Court Unification in Texas.—By an act passed in Texas a step has been taken towards the unification of the courts in that state. The act divides the state into nine administrative judicial districts and requires all trial judges in each district to attend an annual meeting to arrange for the disposition of pending cases.

STATE ADMINISTRATION

BY JOHN M. MATHEWS

PROFESSOR, UNIVERSITY OF ILLINOIS

Reorganizations.—The movement for the reorganization of the state administration along the lines adopted by Illinois ten years ago continued during 1927, but with the usual ups and downs. Bills introduced in the legislatures of three states—Missouri, Oregon, and Arizona—for statutory reorganization were unfortunately defeated. The year, however, was signalized by the going into effect of reorganization adopted in New York. The constitutional amendment which forms the basis of this reform had been adopted in 1925. In order to carry the plan into effect, the Hughes reorganization commission recommended the consolidation of the numerous state boards and commissions into eighteen departments, the heads of four of which should be elective and the others appointed by the governor.

New York State.—Bills embodying

these recommendations were enacted into law in 1926. The heads of departments are responsible to the governor, and additional departments cannot be created by the legislature. Governor Smith has called this "the most progressive and thorough reform in the structure of state government undertaken by any state." As a corollary to this reorganization, Governor Smith has instituted the plan of holding cabinet meetings attended by the heads of the various departments. The cabinet is of assistance to the governor in formulating policies and in coordinating the work of the state administration.

Wisconsin and Virginia.—In Wisconsin, an interim committee of the legislature made a report recommending the abolition of a number of boards, including the powerful state board of public affairs, and the consolidation of their functions un-

der a much smaller number of agencies. In Virginia a special session of the legislature was held to consider a report of a citizens' committee to the governor recommending the abolition and consolidation of state agencies and the adoption of the short ballot.

Oregon.—In Oregon a law enacted

in 1927 creates a central purchasing agency by extending the authority of the state board of control to buy supplies and materials for all state departments in the open competition market. The operation of this measure for only a few months is declared by the board to have saved the state thousands of dollars.

COUNTY AND RURAL GOVERNMENT

BY ORREN C. HORMELL

PROFESSOR OF GOVERNMENT, BOWDOIN COLLEGE

Need for Reform.—The serious need for reform in county and rural government continued to receive marked attention in a number of states during 1927. The following is a brief account of some of the more important developments in that field.

CALIFORNIA

Compulsory Budget.—A compulsory budget law for counties was enacted by the 1927 legislature. The law provides for complete financial information and adequate publicity. Fiscal information both as to receipts and expenditures is furnished by the department heads to the county auditor who tabulates it and presents it to the board of supervisors. Budget hearings are then held by the board, after which the board prepares and distributes the budget in pamphlet form for the information of the interested public.

Kern County Survey.—The California Taxpayers' Association, which was largely responsible for the enactment of the budget law, performed a further service to good county government by making a report (Association Report, No. 4, May, 1927) on the expenditures of Kern County, California. The report presents the results of a survey covering the fiscal year 1925-26. Expenditures are so analyzed as to show "unit costs." Among the constructive suggestions are: standardization of teaching load in the elementary schools; consolidation of the smaller schools; inauguration of central purchasing of school supplies; a proper accounting for

capital outlays and depreciation accounts; and a consolidated balance sheet based upon general ledger accounts of assets and liabilities.

Home Rule in Alameda County.—The home rule charter, which had been adopted by the voters of Alameda county, Nov. 2, 1926, was approved by the Legislature Jan. 18, 1927. Among the outstanding features of the charter are the provisions for a system of centralized purchasing, and stores accounting; a scientific budget system; recall of all elective and appointive county and township officers; an eight hour day for manual laborers employed by the county; and, notably, a civil service commission charged with the standardization and classification of all positions in the classified services, and with recruiting and promoting persons in such services. Alameda County thus became the fourth county in the United States to provide for a county civil service commission. (The other counties are Cook County, Illinois, Los Angeles County, California, and Milwaukee County, Wisconsin.)

IOWA AND MICHIGAN

County Budget.—The Bureau of Municipal Research of Des Moines sponsored a bill (H.F. 114) in the legislature embodying what they considered to be a practical budget practice for counties. The bill failed of passage but will be introduced again in the next legislature. Meanwhile the Bureau has been keeping the financial accounts of Polk County as

an exhibit of what a county accounting system should show with regard to the budget items. A law was passed by the Forty-second General Assembly substituting the serial for the long term method of paying the debts incurred for capital expenditures by local subdivisions.

A Civil Service Commission has been established for Wayne County, Michigan, by a law enacted by the Michigan legislature. The law goes into effect April, 1928.

NEW YORK

Westchester County.—A Westchester county charter (See AMERICAN YEAR BOOK, 1925, p. 174; 1926, p. 190) was again passed by the legislature (signed this time by the governor) and submitted to the voters, but again was defeated at the polls, Nov. 8, 1927, by a majority of more than 11,500 votes. Although again defeated, the Westchester plan remains an important attempt to reform county government, especially in the field of financial and departmental administration. Probably a home rule constitutional amendment, as proposed by the Westchester County Civic Association, would strengthen the chance of the plan with the voters of the county. A Planning Federation was organized by eight of the villages and the four cities of Westchester county banding themselves together to further community planning and secure cooperation with county authorities affecting the county plan.

Town and Village Planning.—The development of town and village planning, including zoning, has been notably furthered during the year by the efforts of the Niagara Frontier Planning Board assisted by the Niagara Frontier Planning Association. They emphasized the fact that authority for planning in towns and villages is granted by state law. The experts of the planning boards assist the committees in the various towns and villages in developing comprehensive plans for future growth and in the execution of such plans.

OREGON

The plan for city-county consolida-

tion in connection with the city of Portland and the county of Multnomah, submitted to the voters at a referendum on June 28, was rejected. It appears that the office-holders and other interested persons organized to defeat it while the friends of the measure lacked enthusiasm and organization.

NORTH CAROLINA

Reform Legislation.—North Carolina led all the states during the year in legislation intended to reform county government. Following the recommendations of the commission on county government which reported in 1926 (See AMERICAN YEAR BOOK, 1926, p. 190) the legislature enacted a law "to provide improved methods of county government."

County Manager Government.—The law provides for two forms of county government, one the *County Commissioners Form*, and the other the *Manager Form*. The more significant portion of the law has to do with the manager form. The board of county commissioners is authorized at its discretion to appoint a county manager who shall be the real administrative head of all the departments of the county government which fall under the control of the commissioners.

Duties of Manager.—The duties of the manager are set down by the law as follows: It shall be the duty of the county manager: (1) to be the administrative head of the county government for the board of commissioners; (2) to see that all the orders, resolutions, and regulations of the board of commissioners are faithfully executed; (3) to attend all the meetings of the board, and recommend such measures for adoption as he may deem expedient; (4) to make reports to the board from time to time upon the affairs of the county, and to keep the board fully advised as to the financial condition of the county and its future financial needs; (5) to appoint, with the approval of the county commissioners, such subordinate officers, agents, and employees for the general administration of county affairs as the board may consider necessary, except such officers

as are required to be elected by popular vote, or whose appointment is otherwise provided by law; (6) to perform such other duties as may be required of him by the board of commissioners.

Other Provisions.—In case the board of commissioners does not thus exercise its discretion a petition signed by not less than ten per cent of the whole number of voters who voted at the last election is sufficient to bring before the voters the question of the adoption of the manager form. The same law provides for centralized purchasing and for the appointment by the board of a competent purchasing agent. The law further provides for the creation of a county government advisory commission the duty of which is "to advise and assist the county officials in the proper administration of county government." The commission is authorized to appoint an executive secretary who shall act as the advisor to the county commissioners and other county officers.

Fiscal Administration.—The legislature passed two other acts second only in importance to the one described above. One provides for "the administration of the fiscal affairs of the county." The board of county commissioners is authorized to appoint a county accountant "who is experienced in modern methods of accounting." He is furthermore made the chief budget officer of the county. Before the first day of June every year the department heads and officers in charge of the expenditures of county money or money of subdivisions are required to file with the county accountant a statement of their expenditures for the current fiscal year, the amounts expended dur-

ing the preceding fiscal year, and an estimate of the requirements of their departments for the ensuing year.

The county accountant then prepares a budget statement which includes: (a) his estimate of the amounts necessary to be appropriated for the ensuing fiscal year; (b) an itemized estimate of the available revenues; (c) a statement of the unencumbered and surplus revenues. This "budget estimate" becomes the basis for the budget items decided upon and appropriated by the county commissioners. The details of the budget, in the main, follow the approved standards of a scientific budget.

The other significant act was the County Finance Act. It limits the amount of revenue which may be loaned in anticipation of taxes and provides that such loans must be paid not later than thirty days after the expiration of the current fiscal year. The more important portion of the act, however, relates to the purposes for which bonds may be issued and the method of their payment. The law adopts the annual serial method in the place of the long term method. It provides that the bonds shall be paid within "the period estimated by the governing body as the life of the improvement for which the bonds are issued." It further establishes the maximum time for the maturing of bonds for the several classes of improvements which maximum time extends from a five year limit for highways constructed of sand and gravel, to a forty year limit for the purchase of land for parks and playgrounds. The popular referendum upon bond issues is provided for on petition of fifteen per cent of the votes cast at the last election.

COGNATE SOCIETIES

AMERICAN CONSTITUTIONAL LEAGUE.
—27 William St., New York,
N. Y.

AMERICAN DEFENSE SOCIETY, INC.—
154 Nassau St., New York,
N. Y.

CIVIL SERVICE FORUM.—2129 Cortel-
you Road, Brooklyn, N. Y.

NATIONAL ASSOCIATION FOR CONSTI-

TUTIONAL GOVERNMENT.—716 Colo-
rado Bldg., Washington, D. C.

NATIONAL CIVIL SERVICE REFORM
LEAGUE.—8 W. 40th St., New York,
N. Y.

NATIONAL STATE ASSOCIATION.—757
Drexel Bldg., Philadelphia, Pa.

VOTERS' EDUCATIONAL LEAGUE.—524
First Ave., New York, N. Y.

DIVISION V

MUNICIPAL GOVERNMENT

CITY POLITICS

BY CLINTON ROGERS WOODRUFF

HONORARY SECRETARY, THE NATIONAL MUNICIPAL LEAGUE

CHICAGO AND MAYOR THOMPSON

Chicago has been a storm center politically during the year beginning with the nomination of former Mayor William H. Thompson, his election and his activities since inauguration. Thompson retired from the office of Mayor in 1923 following a break with his former political allies. It was generally thought that his political career was at an end but he relied upon the passage of time and the shifting pattern of factional politics in Chicago to provide him an opportunity for rehabilitation. His chance came in 1926 when he made an alliance with his former opponents. He and his followers supported them during the primary campaign in return for which they supported him in the mayoralty primary and campaign. The conditions of the bargain as told by Thompson to the Federal Senatorial Committee investigating the Senatorial Primary in Illinois were that Thompson's platform should be adopted,—waterways, anti-prohibition, and anti-World Court,—and that Thompson be given the Crowe-Barrett support for mayor in 1927. The combination was successful in a campaign which was featured by denunciations of the World Court and by almost complete neglect of local issues.

Thompson was easily nominated in the primary. In the campaign for general election he was opposed by Mayor William E. Dever who had been called "the best mayor Chicago ever had." Dever was supported not only by the regular Democratic or-

ganization but by certain elements in the Republican Party and by a large and active group of persons prominent in civic and social life of the city. His appeal to the electorate was dignified, his slogan being "Think of Chicago, Vote for Dever." He emphasized the achievements of his own administration and the shortcomings of the eight years of Thompson's two administrations. Dever pointed to the fact that the public schools had been reclaimed and developed; the city finances had been restored to a sound basis and that there had been a long list of physical improvements including completion of Wacker Drive, electrification of the Illinois Central and the driving of commercial vice from the city.

Thompson's campaign involved an attack on the new Superintendent of Schools who was called the stool pigeon of King George. Thompson appealed to racial groups who were hostile to England and to the narrow nationalism which had proved responsive in earlier campaigns. He was a successful campaigner with a magnetic personality. These advantages combined with his anti-prohibition declarations and his friendship for the negro resulted in his election by a plurality of upwards of 80,000. An analysis of the vote indicates the influence of the factors which have been mentioned.

His election assured, Thompson did not hesitate to fulfill his more spectacular election promises. Through resignations and vacancies the school board was reconstructed into a group

prepared to carry out Thompson's orders. The school superintendent was suspended—his contract protecting him against dismissal—and the farce of a trial was initiated. It was evident that the purpose was, not to determine the superintendent's guilt or innocence, but to prolong the suspension until his term elapsed in January, 1928. Not only was the superintendent's attitude held to be unpatriotic in excluding from the textbooks biographies of Revolutionary heroes racially connected with groups politically significant in Chicago or who chanced to be ancestors of Thompson's political playmates, but a heavy case was built up against such organizations as the English Speaking Union and the Sulgrave Foundation, which were made to appear as sinister agencies of British imperialism. The climax of the affair was reached in the designation of one of Thompson's appointees to the library board, as a censor to detect unpatriotic books on the shelves of the public library. This patriot announced that any pro-British books found would be publicly destroyed by fire. An injunction prevented the burning of censored books and the Mayor finally repudiated any intention of following such a course.

The prophecy of an open town is apparently fulfilled, and by the close of 1927 Chicago began to realize that in electing Thompson it had allowed its prejudices to take the place of its judgment.

SAN FRANCISCO

Mayor James Rolph, Jr., was re-elected at the November election for the fifth consecutive term. If he completes this term it will round out twenty years of service and a record among large cities in the country.

INDIANAPOLIS

The political situation in Indianapolis during the past year has been an active and complicated one resulting in the adoption of the City Manager form of Government and the indictment, prosecution and conviction of Mayor Duvall and the selection by the Council of a high-grade independent as his successor. There

have been sundry other prosecutions involving the Governor of the State and prominent officials and politicians.

The Mayor was convicted of a violation of the Corrupt Practice Act in his campaign for Mayor in 1925. He was sentenced to thirty days in jail and a fine of \$1,000. Under the Indiana law he is disqualified from holding office for the period of four years. The charge against Duvall was that he had promised William H. Armitage the naming of men for three high city officials in return for \$10,000 and his support at the polls. In connection with the trial a witness, Dr. George F. Henninger, testified that at a meeting of 1,500 Ku Klux Klan during the campaign, Duvall had promised to give 60% of the offices to members of the Klan capable of filling them in return for Klan support. The Grand Jury on November 5 returned an indictment against four members of the City Council charged with receiving bribes of \$300 each for reassessing city property and, on November 18, indicted two of the Council already indicted and two others charging them with receiving bribes for voting against the impeachment of Mayor Duvall then out of office.

After an animated and exciting series of events the council elected L. Ert Slack, a Democrat, a lawyer of ability, a citizen of high character and a strong adherent of the City Manager Plan, to serve the balance of Duvall's term.

SOCIALISM IN READING

Reading, Pa., is a commission governed city. At the election on November 8 it chose the Socialist candidates for Mayor and two Councilmen, giving that party a majority of the Commission after January 1, 1928. The overturn is political rather than social in its significance. The election does not mean a support of the theory of Marx and his followers, but it does mean that many of the voters were willing to have anything else rather than a return to power of either one of the old parties. The two political organizations in the city have been working in close

harmony for their own ends and the action of the voters was a repudiation of this working agreement.

Beside the Mayor and two Councilmen, the City Comptroller and two members of the School Board are Socialists. The newly elected Mayor is said to be a man of integrity and responsibility. The Socialist candidate for City Treasurer, who at first was returned as elected, declared that he would accept no more than the \$6,000 a year as salary for that office although heretofore its incumbent has received an income from fees estimated at \$15,000 to \$19,000 annually. His opponent, who on a recount was declared to be successful, has made the same promise.

BALTIMORE

In May, William F. Broenning, Republican, who had been Mayor from 1919 to 1923 was again elected Mayor by a majority of 17,000 in the face of a Democratic registration majority of nearly 60,000. At the same election there was a radical change in the composition of the City Council, which consists of a single chamber with a president elected at large and one member from each ward. In the old Council there was one Republican. In the new Council there are 14 Democrats and 14 Republicans with a Democratic president. One of the Democrats, however, cooperated with the Republicans at the organization of the Council and in the election of a city register, who is an ex-officio member of the Board of Awards which acts on city contracts. The election of a Republican city register made the Board of Awards Republican by one majority.

DETROIT

Mayor John W. Smith, after three years in office, on November 8 was defeated for reelection by John C. Lodge, an outstanding public official of twenty years' experience, Lodge having been drafted by 50,000 signers to petitions and elected after a campaign in which he absolutely remained silent concerning all public questions. The election was really not fought out on the merits of the two men. Smith was the more ag-

gressive man, but Lodge had many more years of experience in city government and commanded the confidence of the public because of his leadership of the better element in the city council. At the primary, Lodge received more votes than all of his opponents put together. The day following, Mayor Smith announced that he would not contest the election farther. However, he almost immediately changed his mind and the election campaign was one of the worst that the City has had for many years. Jitneys, taxicabs, "blind pigs," Negroes, wet and dry, "the common people," were dragged in as an issue and an aid, but through all of it Lodge said nothing and he was elected by a majority of 12,059 in a total vote of 225,000. If there was any one issue that predominated it was whether the town should be run "wide open" or be "reasonably closed." The latter sentiment prevailed. It is not expected that there will be many changes in the City Hall personnel.

BUFFALO

One of the largest American cities operated under a Commission form of government, Buffalo has abandoned it. At a special election held August 28 by a vote of 32,000 to 21,000 it adopted a charter providing for the mayor-council plan of government. Under the new charter, a mayor, a comptroller and a council of 15 members will be elected. Of the 15 councilmen, six, including the president, will be elected at large and nine by three-ward districts. Elective officers with the exception of the district councilmen will have four-year terms. District councilmen will be elected every two years. No elective officer can succeed himself, except the comptroller and district councilmen, the latter for a second two-year term only. Candidates for elective offices will be selected by partisan primaries, but under state laws there may be independent nominations by petitions. There will be 11 administrative departments, nine of which will be single-headed and three administered by boards. All directors and members of the boards, except the

board of assessors, will be named by the mayor subject to ratification by the council. The new charter becomes effective January 1, 1928, but the present mayor will remain in office until the expiration of his term in 1929. Since the development of the City Manager Form of Government there has been practically no extension of the Commission Form as there is a general recognition that better results are obtained under the former than under the latter.

PITTSBURGH

A Citizens League was organized in this city composed largely of Protestant clergymen with a few prominent citizens. They brought an investigator and secretary from the

West who gathered a large amount of alleged evidence, upon which indictments were founded. They also made sundry charges against heads of bureaus, especially against the head of the Police Bureau. The League came under criticism because of the sudden disappearance of its secretary, who later returned and was reinstated. He disappeared again and once more returned, but was not reinstated. It later turned out, according to his own confession, that there had been a "frame up" in which he had participated, together with some of his investigators, in the charges which he had previously made. The Grand Jury has indicted him and he will have to stand trial on these charges.

ADMINISTRATION AND RESEARCH

BY CLINTON ROGERS WOODRUFF

HONORARY SECRETARY, THE NATIONAL MUNICIPAL LEAGUE

Disappointments and Progress.—In his annual report Dr. Luther Gulick, Director of the National Institute of Public Administration and Bureau of Municipal Research, said that the year 1927 had been one of marked importance in the field of public administration. Extremes of progress and of debauchery in government have claimed more public attention than at any time for a decade. Indianapolis has blackened the front pages of the papers with its story; the New York Secretary of State was charged with disgraceful "pin money" peculations; prohibition enforcement continued to debauch police administration in scores of cities where the Volstead Act is regarded as an alien imposition; the New York City milk scandals have been thrust to the fore again; the oil leases have been shown in their true colors.

Among the disappointments Boston has not made good the promise of reform which came with the election of Mayor Nichols; city manager government in Cleveland has not eliminated partisanship from city business; city manager government in

Kansas City apparently has not delivered that metropolis out of the hands of the contractor.

Rochester.—On the other hand, the sustained forward march of Rochester toward good city government deserves more than passing mention. Rochester has always been a well governed city, but five years from now, with an able and technically qualified manager, it is destined to be second to none.

Buffalo.—Though there are weaknesses in its new Federal charter, Buffalo has finally abandoned commission government, bequeathing to Newark, New Jersey, the doubtful honor of being the largest city still under commission government.

Cincinnati, with its new manager and his reforms in police, engineering, finance, and personnel administration is entitled to recognition. The bureaus of research in Rochester and Cincinnati deserve credit for their share in these advances.

New York.—The picture of New York City is not all black. Public officials, the press and the "man in the street" have regarded a sleight-of-hand budget as ethically dishonest.

The credit for this change of attitude belongs, in Dr. Gulick's opinion, in a large measure to Comptroller Berry, Dr. W. H. Allen, the New York *World* and to the long years of work of the New York Bureau. It would be a national achievement, he declared, if smoke-screen budgets with intentionally dishonest appropriations and revenue estimates could be relegated to the limbo of discarded political tricks. Comptroller Berry must also be accorded credit for the radical reorganization of his department which went into effect in January, 1927.

Municipal Administrative Service.

—During the year the National Municipal League's committees, especially those dealing with debt and with the budget have made notable contributions. The development of the Municipal Administrative Service, under Russell Forbes, in a single year with a budget of but \$15,000 to a foremost position as a clearing house, service bureau, and publishing agency for government research, is a striking achievement.

Publications.—1927 is notable beyond recent years, especially for the large number of first class contributions which have been made to the literature of public administration: McCabe's *City Health Administration*; Upson's *Municipal Administration*; *Municipal Finance* by Buck and others; Ridley's *Measuring Municipal Government*; Kilpatrick's *State Administrative Review of Local Budget Making*; the Virginia Survey by the New York Bureau; The Negro in Detroit by the Detroit Bureau of Governmental Research; Part II of the North Jersey Transit Commission Report by Cornick and others; New York State Crime Commission's Report on Police by Bruce Smith; Righter's *Preparation of a Long Term Financial Program*; Willoughby's *The General Accounting Office*; Marriott's *The Mechanism of the Modern*

State and Dr. Beard's *Rise of American Civilization*, because it is shot through with an understanding of administration, and shows that government rises from and is an inseparable part of life.

New Bureaus were established during the year as follows: Buffalo Municipal Research Bureau, Harry H. Freeman, Director; Bureau of Research, Kansas City, Kan., Chamber of Commerce, John F. Willmott, Director; Michigan Tax Economy League, Lansing, Mich., L. E. Rowley, Secretary; Fall River Taxpayers Association, Fall River, Mass., H. T. Fisheck, Director; Oklahoma City Research Association; Syracuse Committee on Municipal Research, School of Citizenship and Public Affairs, Syracuse University, S. H. Evans, Secretary; Bureau of Municipal Research and Information, University of Florida, S. W. Hollingsworth, Director; Stamford Taxpayers Association, 432 Main Street, Stamford, Conn.

Municipal Research Agencies.—

There are now some 300 men and women professionally engaged for the major portion of their time in government research, not counting those who are dealing with educational administration. There are 74 government research agencies in operation spending annually not less than \$1,300,000. All of this has come to pass in 22 years.

The Municipal Administration Service controlled by a Committee from the League and the Governmental Research Conference compiled in May a list of municipal research agencies, thus bringing previous lists up to date. It lists 72 such agencies in the United States, 4 in Canada and 4 in other countries. The address of each agency is given, together with the name of the director or secretary, and in some cases that of the president or chairman, and the date of establishment.

CITY MANAGER GOVERNMENT]

BY CLINTON ROGERS WOODRUFF

HONORARY SECRETARY, THE NATIONAL MUNICIPAL LEAGUE

PROGRESS OF PLAN

White Report.—The increasing acceptance and adoption of the city manager plan is one of the features of the year in the field of municipal government and Professor L. D. White's book *The City Manager* one of the outstanding books. This book, based on a year's intensive study, including a five months' field study, was made at the suggestion of the Executive Committee of the International City Managers' Association and the Department of Political Science of the University of Chicago. Interested primarily in actual administration rather than municipal government in general, Prof. White has concentrated on the personalities and methods of the managers of six fairly typical American cities.

Through study of the personality and method of each, and through his broad knowledge of the general subject of public administration, Dr. White came to some definite conclusions about the type of administrative official necessary to the successful maintenance of this sort of government. His study of administration evaluates to some extent the council-manager plan itself. He shows the movement for its adoption to be a reaction of civic and business interests against waste, extravagance, and the corruption of politician government; and a product of a fundamental change of ideals about American municipal government. Dr. White explains that his main task was that "of describing and analyzing the office of city manager and of relating how the incumbents of the office behave in the different circumstances in which they find themselves."

Significance of the Manager.—He believes that the preponderant interest in the manager and the relative eclipse of the council and the city, an eclipse which although only partial "should not obscure the fact that in the ultimate evaluation of the form of government in which the

manager operates, the council, the voters, the chamber of commerce, the labor union, and the press all have an important share." It is therefore necessary to guard against the notion that the manager is the sole factor in the success of the council manager plan.

The manager is significant in other contexts than his city, for he is now one of the best illustrations found in this country of the emerging technically professional official. It is his contribution to the establishment of this new ideal of officialdom that prompted the undertaking of this study. Viewed in this light, the manager is not merely a city official, making certain contributions to better municipal government; he is also a forerunner of the type of official who must become the pattern of the next generation if the American Government is to achieve its purpose, or even maintain its self respect.

MODEL CITY CHARTER

Revision.—The National Municipal League has again revised its Model Charter and its Home Rule constitutional provisions. In 1900 the League adopted its first "Municipal Program," designed to "embody the essential principles that must underlie successful municipal government" and to "set forth a working plan or system . . . for putting such principles into practical operation." As first drafted, the program took the form of a series of proposed constitutional amendments defining the relation of the municipality to the state together with a general municipal corporations act to be adopted by a municipality upon a referendum vote of the people. In 1913 a new committee was appointed to draft a new model to meet the changed conditions brought about by the popular sweep of commission government and the emergence of the city manager plan. As a result of this committee's deliberations a "New Municipal Pro-

gram," adopted in 1915, expressed the newer point of view. It has with slight revision continued to the present, and 400 cities have adopted the city manager plan prescribed in it. It seems clear that no other single document has rendered such influential service to charter commissions and those promoting the manager plan as has this well-known "Model."

In 1925, the 1913 Committee was reconstructed and charged with further revision of the charter in the light of ten years' experience with the manager plan. The present "Model" is the result. In general, the older document was found still to be satisfactory. No considerable change of principle has been made and in but few cases has the present charter practice seemed to have advanced beyond that deemed desirable fifteen years ago.

HOME RULE CONSTITUTIONAL PROVISIONS

Powers.—The home rule constitutional provisions recommended by the committee are of the broadest. The city is given authority to exercise all powers relating to municipal affairs. Without limiting the generality of such authority, certain specific powers are enumerated. Among them are the powers to build, purchase and operate public utilities, to levy special assessments and to acquire property by excess condemnation, and to frame, adopt and amend municipal charters. The scope of activity embraced within the term "municipal affairs" will of course depend upon the attitude of the courts. As phrased in the New Municipal Program, it is designed to aid them in abandoning the old doctrine of strict construction of enumerated powers and to enable them, in the absence of specific authority from the constitution or the legislature, to confer upon the municipalities powers which are properly local in nature and which, in a moral sense at least, are inherent in a community which has reached the city stage.

Council-Manager Forms.—The new model provides for a city manager appointed by a council in turn elected by the people in accordance with

the Hare system of proportional representation. The manager serves at the pleasure of the council. Before he may be removed, however, he must, if he so demand, be given a public hearing before the council, but the action of the council is final. Subject to the civil service provisions, the manager appoints all officers and employees in the administrative service. He may, however, delegate to a department head the appointment of subordinates within the department.

The charter sets up three administrative departments, viz., law, finance, and civil service. Other departments may be established by ordinance as required. In the department of finance fall the divisions of audit and accounts, treasury, purchases and supplies, and assessment. No separately chosen auditor or controller is provided; the council, however, is instructed to select each year qualified public accountants to make an independent audit of all city accounts.

Civil Service.—With respect to civil service, the new model represents a distinct departure, not only from early editions of the document, but from general practice as well. The department of civil service is to be under a director appointed by the manager. A civil service board of three members of which the director will be chairman is created to share with the director the rule-making power. One member of the board is to be chosen by the city council, and the other is to be elected by the employees in the classified service. Rules governing employment service, promotions and discharges will be framed by the director in the first instance, but will not become effective until submitted to and approved by the board.

The administrative side will be in the hands of the director, thus assuring administration by a single head rather than by a cumbersome board. When an appointment is to be made, the director will certify the three highest eligibles to the appointing authority, who will select one of the persons so certified. Dismissals are exclusively in the hands of the

manager or the appointing authority designated by him. The discharged employees may demand a hearing before the civil service board, but the judgment of such board is advisory only.

SIGNIFICANT EVENTS

In Various Cities.—Cleveland (q.v.) at the November election voted to retain the city manager form. In Cincinnati the operation of the manager form has steadily progressed in popularity and efficiency. Indianapolis on June 21 voted to adopt the manager form. Kansas City, Mo., is one of the cities where the manager form has not accomplished as much as was expected. Nevertheless the administration leader (A. N. Gossett) makes claim to the following accomplishments:—Solution of the street railway problem; settlement of the garbage question; acquisition of a suitable airport; provision made for a free bridge across the Missouri River; completion of the Blue Valley sewer; operation of the city within its revenue; reconstruction of downtown street pavement and repairs in the residence streets; at least partial abolition of the smoke nuisance.

Cleveland.—In one of the most hotly contested campaigns in its history the voters of Cleveland, on November 8, voted to retain the city manager form of government, that has been in operation for four years. Three charter amendments, two of them complete charters and one changing the election provisions by wiping out proportional representation on the ballot as the result of initiative petitions were defeated. Recognizing the confusion which would inevitably follow, the Citizens League proposed the election of a charter commission as the orderly way to prepare and submit to the voters substantial changes in the fundamental law. This proposal also was defeated.

The political battle was really not a charter campaign but a fight between the "ins" and "outs" in the Republican party. Former Mayor and Governor Harry L. Davis, who has been out of public office for four years, fathered the repealing amendment as a means of regaining political power. He is a popular leader and had the support of organized labor and the dissatisfied elements in the city. In the face of this threatened danger, the Citizens League and the regular Republican and Democratic organizations formed a coalition, named a high-grade ticket for the charter commission and organized a citizens charter commission committee of 1,000 members to conduct a campaign in favor of retaining the city manager form of government.

During the campaign stress was laid on defeating the Davis amendment and not on the election of a charter commission. One of the strong newspapers vigorously opposed not only the amendments but also the charter commission. As a result, all four charter issues were defeated in the election. A vote of 154,000 was polled, and the city manager form was saved by a majority of 7,393.

The city and its suburbs have not been so aroused over a political issue since the days of Tom Johnson. One of the interesting by-products of the campaign has been the creation of a widespread interest in the borough plan of government or some other form of unification through which the business and professional men living in the suburbs can have a voice in the government where are their business and financial interests. The Citizens League, which has been advocating regional government for ten years, is planning a county-wide conference on the subject in the effort to crystallize this public sentiment in favor of unification.

METROPOLITAN AND REGIONAL PLANNING

BY CLINTON ROGERS WOODRUFF

HONORARY SECRETARY, THE NATIONAL MUNICIPAL LEAGUE

NEW YORK DISTRICT

Metropolitan and Regional planning is being very rapidly developed in and around all the larger cities of the country. The New York Metropolitan District as shown in a map published by the Merchants' Association of New York, was defined in accordance with principles approved by the United States Census Bureau, which will furnish 1927 Census of Manufacturers figures on the basis of this District and intends likewise to use the District for the purposes of the 1930 Population Census. The boundaries were determined on the recommendation of the committee representing various civic and business interests organized by the Merchants' Association.

The chief reason for re-defining was the inadequacy of the present district as defined by the Census Bureau which fixed the boundary at a line drawn parallel to and ten miles distant from the corporate limits of the City. There was much confusion in the public mind regarding its exact limits. A further reason lay in the growing significance of the adjacent territory in relation to important urban problems such as transportation, particularly rapid transit, recreational facilities, city planning, etc.

The new Metropolitan District includes approximately the 40-miles circle from City Hall. Besides the five counties in the City, all of Nassau and part of Suffolk counties, part of Fairchild County, Conn., all of Westchester and Rockland counties, are included. In New Jersey, it takes in Bergen, Passaic, Morris, Essex, Hudson, Somerset, Middlesex and Monmouth counties. The total area is 3,768 square miles and the population totals 9,472,500.

INDUSTRIAL CITY BUILDING

Recent Surveys.—Growing interest in the development of American cities as industrial units is reflected in a

list, compiled by the Organization Service of the Chamber of Commerce of the United States, of sixty-nine municipalities that have made industrial surveys during the past few years. This is only a partial list but it shows how obsolete has become the old idea that a city, from an industrial viewpoint, is a providential conglomeration. It shows, conversely, a wider recognition of the idea that industrial growth is due to definite causes and that American cities are deliberately ascertaining and analyzing these causes as a basis for future development. Substantial growth has been substituted for mere bigness as the first desideratum in city building. The partial list begins with Albany and ends with Wichita, Kansas. It includes such cities as Chicago, Austin, Atlanta, Dallas, Denver, Detroit, Duluth, Indianapolis, Los Angeles, New Orleans, New York, Providence, San Francisco. It includes some of the older and some of the newer American cities. The surveys cover vast metropolitan areas and relatively small towns. The method is evidently applicable to all communities desiring to ascertain their places in the sun.

Tabulation.—The subject was first brought to the Chamber's attention through the need of planning for urban growth beyond municipal boundaries. Later it came up again as a matter of more immediate interest to chambers of commerce. The Census Bureau reports facts as to industrial, commercial and social conditions in terms of states and political subdivisions of states. It assembles and tabulates such facts as to the area within city boundaries. Today, however, the real city extends beyond its political boundaries. The chamber of commerce wishes to know facts as to this outside territory. Except in a few cases where the Census Bureau has assumed a metropolitan area by drawing a circle with a ten-mile radius modified by population den-

sity, the facts as to conditions outside the city boundaries were not readily available. Obviously the Census Bureau in assembling its data must have a definite area within which to work. After every census there are many complaints that the statistics do not present certain local situations fairly. This is an attempt to reduce the cause of such complaints. While there are more than two and a half years before the next census is taken, this time is none too long for some of the work proposed.

Recharting.—Forty-six cities have notified the Civic Development Department of the Chamber of Commerce of the United States that they are setting up the boundaries of their metropolitan regions in preparation for the 1930 census. In setting up these new industrial and business units state and city lines have both been obliterated. The metropolitan area ignores rivers and artificial boundaries. Recharting the country by metropolitan or business areas will, it is asserted, present a much more accurate and graphic picture of economic development which has long since spilled over arbitrarily fixed city limits.

THE NIAGARA PROJECT

The Niagara Frontier Planning Board was created by special Act of the New York Legislature (Ch. 267, L. 1925) and was empowered to study the needs and conditions of regional and community planning within Erie and Niagara Counties, and to prepare plans adapted to meet such needs and conditions within that portion of the State. It prepared in 1927 a pamphlet to present, within brief compass, a review of the legislation empowering towns and villages to adopt plans for the regulation of their future growth and development along lines which will best serve and promote their general welfare. The Board retained as its special Counsel in this matter, Carlos C. Alden, of Buffalo, to cooperate with Frank C. Moore, Counsel of the Niagara Frontier Planning Association, to prepare model ordinances for villages and towns in this State and the results

of their labors are printed in full in this pamphlet.

An International City in this region of New York State has been proposed by George C. Diehl of Buffalo. Nearly a million people and taxable assets of one and a half billion dollars mark the area of International City as a substantial unity today. These million people have created billions of value by their use of the natural resources of the district and those which they have added by their industry. In advocating the establishment of this international community, Mr. Diehl points out that long ago the United States recognized the basic principle of free trade zones but limited its operation by various regulations tending to defeat its purpose in all but a very few operations which cannot be carried on otherwise. Instead of free ports we have: (a) Bonded warehouses, where goods intended for re-export may be entered and held free of duty; (b) Bonded manufacturing warehouses, where without the payment of import duty, goods may be handled, altered or manufactured solely for export; (c) the drawback, which is a repayment of 99% of the duty paid on imported goods when they are exported.

Granted the privileges of a free port, in which the raw materials of either country might be assembled and manufactured without restriction until ready for sale or export, the International City, which has been pictured as the development of the years would be realized as quickly as factories could be erected and equipped for operation. Because the idea of an International City is unique this region received more world-wide publicity in 1927 than in all the years since the Pan-American Exposition. The story of its possibilities, and the resources and facilities on which it is to be founded, particularly its power and transportation assets, have been printed in magazines of national circulation, in metropolitan dailies and Sunday specials, and in the thousands of smaller newspapers and publications throughout the land.

This proposed International City is the logical development of the nat-

ZONING

ural and acquired resources and facilities for trade and industry on both side of the Niagara River, on the great highway of a continent's commerce, into an outstanding producing area unique in all the world. It would be a tangible example of the possibilities of peace, understanding and cooperation between the people of two great nations. It would constitute a city of 700 square miles, made up of scores of communities wholly independent in the management of their own political affairs but all contributing to the business and commercial success of all the others. The 400 square miles on the New York side already have developed into a metropolitan area with a production of a billion dollars in value every year. The 300 square miles in Canada are available for enormous expansion. A city with 58 miles of lake front, 18 miles on Lake Ontario and 40 miles on Lake Erie, 85 miles on the Niagara River (both sides navigable except eight miles), 50 miles on the Welland Canal, and minor waterways, slips, basins and harbors.

OTHER REGIONAL PLANS

Philadelphia is the center of an extended effort to develop a Philadelphia Tri-State District under the leadership of a Regional Planning Federation.

Pittsburgh.—After four years of labor, the Commission created in 1923 to study municipal consolidation in the Pittsburgh area secured the final

passage, by the Pennsylvania Legislature of a constitutional amendment authorizing the establishment of a Greater City of Pittsburgh co-extensive with the present county of Allegheny. This amendment will be submitted to a vote in the autumn of 1928. If it is approved the Legislature of 1929 will be called upon to adopt a charter for the Greater City, which in turn will be submitted to the double test of a majority vote in the county as a whole and a two-thirds majority in at least sixty-three of the existing cities, boroughs, and townships of the county. Pittsburgh will then assume the census status of one of the world's great cities, with a probable population of 1,500,000. It will become the world's largest city in point of area, 650 square miles.

The amendment provides for the transfer to the new metropolitan government of all the powers of the county of Allegheny and of such ordinary municipal powers as are not left to the existing local government units of the county. These units are to be preserved with their present boundaries and forms of government as "municipal divisions" of the Greater Consolidated City with the "constitutional and legal capacity of municipal corporations."

Cleveland is another larger city that has inaugurated a comprehensive movement to create a Greater City, an organization to promote that end having been inaugurated in the autumn.

ZONING

By CLINTON ROGERS WOODRUFF

HONORARY SECRETARY, THE NATIONAL MUNICIPAL LEAGUE

Los Angeles Case.—There has been a general development of the recognition of zoning as part and parcel of sound municipal policy. Comprehensive zoning has again been upheld as constitutional by the United States Supreme Court (see A. Y. B., 1927) in an opinion delivered by Sutherland, J., on May 6 in a mandamus proceeding brought in the Supreme

Court of California to compel the issuance of a building permit to enable the erection of a business building upon a lot lying within a district of Los Angeles restricted by the zoning ordinance against buildings of its character. The ordinance, of the now familiar comprehensive type, in the main regulates only the character of buildings which lawfully may be

erected and does not prescribe height and area limitations. It was assailed as being repugnant to the due process of law and equal protection clauses of the Fourteenth Amendment. The property was in a zone limited to buildings for residential purposes, churches, private clubs, educational and similar purposes. All buildings for private business are excluded, with the exception of offices of persons practicing medicine. The State Supreme Court upheld the ordinance. The constitutional validity of the ordinance in its general scope was settled by the decisions in *Euclid v. Ambler Co.*, 272 U. S. 365; and upon the record it was found that there was no warrant for saying that the ordinance was unconstitutional as applied to the facts in the present case.

New York.—In an important New York case (*Wolfson v. Burden*) the highest Court maintained that the municipality had the power to exclude certain types of buildings from a zone. The Court went further, however, and decided that even if there were not this complete power of exclusion, the authorities could regulate apartments in residential districts, as they have done in the ordinance under consideration for the public safety or general welfare. The validity of reasonable zoning in all its essentials was reasserted.

A minor point was treated in this decision, the Court stating that "because the provisions permitting the erection of apartment houses provide in substance that there shall be no display of advertising visible from any street, the argument is made that the zoning regulations are based upon esthetic consideration and therefore not sustainable. If we are right that the erection of apartment houses

might be altogether prohibited, then we should say that as a condition of permitting their erection the condition in question might be imposed. The restriction of advertising matter referred to in this case is a minor incident; the main regulations are of height and of open spaces and these provisions are not rendered invalid because consideration is given to appearance of buildings as a minor and auxiliary reason."

Zoning Progress.—In July the United States Department of Commerce, Division of Building and Housing (John M. Gries, Chief), issued a report entitled *Zoning Progress in the United States*. It consists of an article by Edward M. Bassett on "Zoning and the Courts" and a "Report on Zoning Laws and Ordinances." More than thirty million people, comprising in excess of 55 per cent of the urban population of the United States, now live in zoned communities. Forty-six states and the District of Columbia have laws which permit communities to zone themselves. Of these states, 28 have used all or a large part of the *Standard State Zoning Enabling Act* issued by the Department in 1924. The report gives a complete list of the zoned communities.

The Legal Aspects of zoning are treated in a book by Newman F. Baker. It deals not only with the legal phases, but it is a treatise on the law of several of the most important aspects of the law of city planning, including esthetics and the billboard—for, as he shows, billboard regulation is by no means confined to the promotion of beauty—zoning in its various phases and metropolitan planning. Mr. Baker's book covers the field in the light of the most recent legislation and judicial decisions.

CITY PLANNING

BY CLINTON ROGERS WOODRUFF

HONORARY SECRETARY, THE NATIONAL MUNICIPAL LEAGUE

Progress.—Dr. John Nolen in his presidential address at the 19th National Conference on City Planning

reviewed the twenty years of city planning progress in the United States. An analysis of some of the

CITY PLANNING

factors that have affected American city life and city planning during the last two decades, with special emphasis on the skyscraper and the automobile, was followed by the query: "When we turn to city planning itself, what do we find twenty years ago?" To this Dr. Nolen's answer was: "Almost nothing." With the exception of the McMillan plan for a comprehensive park system for Washington (1901) prepared by a distinguished group, Burnham's plan for San Francisco (1905) and a few tentative and unofficial efforts no comprehensive city plans, no master plans as we think of them today, had been prepared. There were no city plan commissions; the idea of the civic survey and regional planning was unknown; no zoning ordinances had been passed or even discussed; there was no National Conference on City Planning and no American City Planning Institute; no teaching of city planning in technical schools or colleges; and virtually no books or other publications of note on this subject. Moreover, there was no interest in city planning among the people generally, except so far as it was beginning to express itself in a wider discussion of the city beautiful in connection with civic centers and parks and playgrounds and other open spaces.

Replanning.—Contrasted with these conditions of twenty years ago are the following present-day facts and figures: The record shows that 157 cities, with a population of over 16,000,000, have been broadly replanned, for most of which the accompanying reports have been printed. These plans include cities in every state in the Union with the exception of Arkansas, Delaware, Idaho, Kentucky, Louisiana, Mississippi, Montana, Nevada, New Hampshire, North Dakota, Oklahoma, South Dakota, Utah, Vermont, and Wyoming. The greatest number of plans were prepared for cities of 50,000 to 100,000 population. The number of various population groups is as follows:

Population	No. of Planned Cities
500,000 to 1,000,000.....	8
250,000 to 500,000.....	12
100,000 to 250,000.....	22
50,000 to 100,000.....	35
25,000 to 50,000.....	28
10,000 to 25,000.....	25
5,000 to 10,000.....	13
2,500 to 5,000.....	6
Under 2,500.....	6

Ordinances.—Official zoning ordinances have been adopted by 460 cities, more than three times the number of cities for which comprehensive plans were prepared. One-half the urban population of the United States is now living in zoned cities. All states have zoned cities except Arizona, Idaho, Kentucky, Mississippi, Montana, New Mexico, South Dakota, Texas, Vermont, West Virginia, and Wyoming; New York State leading with 77.

Commissions.—City planning commissions have been established in 390 cities, with a population of over 30,000,000. There are city planning commissions in every state with the exception of Arkansas, Idaho, Mississippi, Nevada, New Mexico and North Dakota. In Massachusetts, Pennsylvania, Ohio, California, Indiana and Kansas state planning organizations in one form or another have been formed as federations of these city planning commissions. In Massachusetts planning boards are made mandatory in every city and town of 10,000 or more. In Pennsylvania city plan commissions are authorized in cities of the first, second and third class. In New Jersey plan commissions are authorized in cities, boroughs, and incorporated villages. In New York plan commissions are authorized in all cities, incorporated villages and towns. Cities in many states have been given more right to acquire land and a better chance to pay for it; in Massachusetts under the constitutional amendment adopted in 1911, which incorporates the principle of excess condemnation; in Ohio under the constitutional amendment adopted in 1912, providing for excess condemnation and the right to distribute the cost of improvements on specially benefited ter-

Population	No. of Planned Cities
1,000,000 or more.....	2

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ritory; and in Wisconsin and New York by a constitutional amendment allowing excess condemnation adopted by two legislatures and submitted to the people in 1913.

Court Decisions.—During this period important city planning legislation has been passed and judicial decisions of great importance and influence have been rendered. The

constitutionality of zoning has been upheld by the highest courts of California, New York, Arkansas, Illinois, Oregon, Rhode Island, Louisiana, Wisconsin, Massachusetts, Ohio, Minnesota and Kansas. The Supreme Court of the United States upheld zoning recently in important decisions in the Euclid Village and Minneapolis cases.

FIRE PREVENTION

BY CLINTON ROGERS WOODRUFF

HONORARY SECRETARY, THE NATIONAL MUNICIPAL LEAGUE

PROGRESS

The outstanding accomplishment in fire prevention in 1927 lies in the extension of the field engineering service of the National Fire Protection Association and in the remarkable results in the form of marked reductions in the fire loss. The results of these activities have been particularly striking in a number of individual cities where intensive work has been done. In addition, the national fire loss showed a material reduction over the year 1926, this being the first drop in the fire loss curve after a progressive increase extending over a long period of years.

Curbing Incendiarism.—In the opinion of the State Fire Marshal of West Virginia, who has been a leader in the movement for fire prevention, the salient developments during the year were the material enlargement of anti-fire activities, both local and general, and the growth of interest and effort in the fight to curb incendiarism. Criminal fires constitute one of the toughest problems for fire preventionists and it is encouraging to note a marked change in public sentiment in that direction. It is becoming less difficult to secure co-operation in the investigation of crooked fires and to get convictions from incriminating facts established. Public indifference is giving way to a desire that perpetrators of this despicable crime be brought to book.

In West Virginia arson squads have been organized in all of the principal

cities and in every instance the initiators of the work from this department and the National Board of Fire Underwriters were given all possible assistance by the local authorities. This state has been badly beset by incendiaries. The fire consciousness of West Virginia is unquestionably being quickened and good results are bound to be registered in due time. Charleston, the Capital City, formerly had one of the worst fire records of any city in the country; now it is one of the "honor cities" designated by the National Fire Waste Council. Huntington, Clarksburg, Parkersburg, Weston and other municipalities also have been accorded similar recognition in recent years. The betterment is largely attributable to generous newspaper publicity and to more general and effective organized effort in the several communities. Chambers of commerce and other trade and civic organizations are more alive to the seriousness of the terrible fire waste and life loss from fire.

FIRE LOSSES

In an article in *The American City*, Franklin H. Wentworth, the Secretary of the National Fire Protection Association, pointed out that the American fire record in recent years yields two significant facts: first, the United States is paying an annual toll of 12,000 lives and more than \$500,000,000 in property; second, the month of October has quite consistently shown lower losses than the other months since the observance of

FIRE PREVENTION

Fire Prevention Week has become established. The reported losses in the United States and Canada for October, 1926, of less than \$15,000,000, made the lowest record for any month in seven years. This indicates that when the public takes the same precautions against fire all the year round it takes in October under the stimulus of Fire Prevention Week, the fire waste will decline. In short, the vast majority of fires are preventable and when people want to stop them they can.

The history of fire prevention in America is the story of a constant struggle against national callousness to the loss of human life and destruction of property by fire. Since the World War the United States has sacrificed more lives through fires than in the War itself. An invading army that succeeded in blowing up every building in every college and university in the land would inflict no greater damage than fire does every fifteen months.

National Fire Protection Association.—Against this colossal carelessness there was pitted at the turn of the last century the work of a few men, then gradually the efforts of a larger and larger group. The clearing house for all fire protection activities today is the National Fire Protection Association, which includes in its membership and on its active committees, the representatives of no less than 145 organizations interested in fire protection and 4100 individuals who are public officials, architects, engineers and others interested in conservation. As the annual fire waste mounted, the work of the Association developed from scientific study of the problem and technical research to include educational activities on a national scale, and finally, in 1924, to embrace pioneer field work by skilled fire prevention engineers which has proved to be the outstanding step in the recent history of fire prevention. In a number of cities where this work was carried on, the per capita fire loss curve sharply declined.

Law-Enforcing Arm of International Influence.—A striking development in this whole work came in

1926 with the decision of the Fire Marshals' Association of North America at its Memphis convention to unite with the National Fire Protection Association as a fire marshals' section. Thus the National Fire Protection Association was given a law-enforcing arm. Since practically all provincial fire marshals in Canada are members of the N. F. P. A. and will automatically become members of the new section, the group will be one of international influence. It will be further strengthened by the admission of city fire marshals. The significance of this move is that hereafter each law-enforcement officer will have the support of all members of the National Fire Protection Association in his state, a non-political group of diversified interest constituted to concern themselves with his problems. He will have the right to call on them to strengthen his policies and influence.

ARSON

Revision of the arson laws is an immediate activity of the fire marshals' section. In most states loosely drawn statutes offer a convenient escape to incendiaries and have done so for a decade. Convictions are difficult and few. Influential members of the National Fire Protection Association, such as the National Association of Credit Men, the Railway Fire Protection Association, and others, are pledged to cooperation in urging the passage of a model statute. The legal department of the National Board of Fire Underwriters has made a useful contribution by preparing a digest of existing arson laws where new legislation is sought. As crooks do not organize, there should be no formidable opposition to the passage of this model statute, which has, at the current sessions, already passed in the Legislatures of New Hampshire, North Carolina, Delaware, West Virginia and Indiana. Experience has proved that the chief impediment is likely to be public inertia.

NATION-WIDE CAMPAIGN AGAINST FIRE

It is not the lack of scientific knowledge of how to check the fire

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waste, for that knowledge is abundant and available to all, but the difficulty in applying what is known that constitutes the vital problem of fire prevention. This is the reason why the field work of the National Fire Protection Association, initiated in 1924 to supplement its general educational activities, is of such significance that it has now attracted the attention of some of the most prominent business men in the country, who have united, under the leadership of Irving T. Bush, in undertaking a nation-wide campaign to raise \$500,000 for its development. The objective is to carry on a scientific and systematic attack on the fire scourge comparable to the scientific and systematic attack launched by medical science against such plagues as yellow fever or hookworm. The distribution of pamphlets is an essential part of the work, but it is

not enough. Personal contact must be made with the fire prevention forces in every city through the agency of a skilled fire prevention engineer who has the requisite knowledge to marshal, concentrate and encourage these forces after a survey of the local situation has supplied him with a practical program of procedure.

Since 1924 the Association has sent two such engineers to more than 80 cities, where they lent a helping hand to local fire prevention agencies and civic organizations. Where necessary, they set the proper wheels in motion to bring results. In that brief period the saving can already be measured in hundreds of thousands of dollars. It has been fully demonstrated that organized effort will get results. Here is the record for ten cities which have demonstrated this:

PER CAPITA FIRE LOSS

City	1923	1924	1925	Per Cent Reduction Over 1923
Chelsea, Mass.	10.61	6.24	4.45	58.0
Concord, N. H.	11.14	4.91	4.90	56.0
Springfield, Mass.	6.14	2.82	2.76	55.1
Norfolk, Va.	4.91	3.04	2.52	48.7
Providence, R. I.	7.21	4.29	2.28	41.4
Utica, N. Y.	5.01	3.00	3.01	39.9
Grand Rapids, Mich.	8.03	6.90	4.98	38.0
Detroit, Mich.	3.99	3.17	3.16	20.8
Indianapolis, Ind.	4.23	3.47	3.38	20.1
St. Paul, Minn.	5.13	4.99	4.16	18.9

The per capita loss for the United States in 1925 averaged \$4.94.

THE NORFOLK CASE

Norfolk, Va. (a city manager city), is regarded as a banner fire prevention city. From 1916 to 1923 inclusive the fire losses had averaged \$10.38 per capita. The citizens did not know their city had the worst fire record of any in the country. The field engineers of the National Fire Protection Association selected Norfolk in 1924 as the first city in which to apply the ideas for which the service was created. Norfolk had city officials of unusual character and ability. A citizens committee was created. Public interest was awakened. A program was developed in the ap-

plication of which the N. F. P. A. field engineers actively cooperated, visiting Norfolk in October, 1924; December, 1924; February, 1925; July, 1925; February, 1926; October, 1926. The result of the awakening of Norfolk was:

Year	Fire Loss per Capita
1924.....	\$3.04
1925.....	2.52
1926.....	1.79

compared with \$10.38 per capita for the preceding eight years!

Norfolk accomplished these results (a) by creating an efficient inspection system by uniformed firemen with adequate authority to keep the city free from fire-breeding rubbish; (b) by creating an arson squad to

investigate every suspicious fire; (c) by establishing salvage work in the fire department to prevent water damage (often greater than fire damage); (d) by establishing fire prevention education in the public schools; (e) by the maintenance of high efficiency in the fire department by a school of instruction and weekly drills; (f) by increasing the water pressure in the mains of the high value district.

Its present activities include the preparation of a modern building code and a comprehensive fire prevention code (now almost ready for adoption) and a study of the hazardous wharf district to determine what means are practicable to safeguard the city from conflagration attack from that section.

CHAMBER OF COMMERCE OF THE U. S.

Fire Waste Contest.—The chamber is an active factor in the fire protection movement. It maintains a National Fire Waste Council associated with its Insurance Department of the Chamber in the promotion of the national fire prevention program for commercial organizations. It held its most successful meeting September 23. The chairman in opening the meeting stressed the value of the Inter-Chamber Fire Waste Contest in which 564 cities are now participating. The Agricultural Committee has prepared two complete reports on the subject of "Rural Fire Protection and Prevention Methods" and "Rural Fire Departments" available to rural communities throughout the country. The Committee plans to concentrate efforts this year on a text book of farm fire prevention for which there is a great demand. The report of the Contest Committee showed continued growth in the Inter-Chamber Fire Waste Contest and also splendid progress in the newly created service of establishing personal contact with chambers of commerce in the Contest at least once a year. To date more than 100 chambers have been visited by representatives of the Council.

Test Surveys.—The Fire Casualty Statistics Committee reported that a test survey conducted in twelve

states during April, May and June had disclosed a reduction of about 25% in deaths due to fire as compared with the corresponding period of the preceding year. Another test was made during the months of November, December and January to correspond with a similar test conducted during those months last year.

RURAL PROTECTION

The fire engine, long associated with crowded city streets, like many other things of metropolitan origin, has taken to the open country. This is due to the realization that farm fires cost agriculture, in the aggregate, approximately \$150,000,000 a year and to the fact that by increasing the mobility of the fire engine a way has been found of putting many of these fires out. "The rural fire department," the Agriculture Committee reported to the Council, "is a proven success. Where such a department is in operation large losses have been prevented and sweeping fires which would otherwise have destroyed large farm values where closely grouped, have been efficiently checked." The Agricultural Committee Council has brought together material and photographs to serve as a guide to communities contemplating the formation of a rural fire department.

UNDERWRITERS' LABORATORIES

This is a corporation chartered November, 1901, by the State of Illinois, authorized to establish and maintain laboratories for the examination and testing of appliances and devices, and to enter into contracts with the owners and manufacturers of such appliances and devices, respecting the recommendation thereof to insurance organizations. It was established and is maintained by the National Board of Fire Underwriters, "For Service—Not Profit." The object is to bring to the user the best obtainable opinion on the merits of appliances, devices, machines and materials in respect to life, fire and collision hazards, and theft and accident prevention.

The work is undertaken as one means of reducing the enormous and

disproportionate loss of life and property by fire and accident. Underwriters' Laboratories' comprehensive testing equipment and corps of experienced engineers afforded unequalled facilities for work of this character. The long experience of the Laboratories in this work, and the methods employed for keeping in close touch with manufacturers, users,

inspection bureaus and all other sources of practical information have resulted in a general recognition of its standards and recommendations.

Underwriters' Laboratories of Canada was formed by the Illinois Corporation for the purpose of carrying forward the work in Canada, the charter being granted by the Dominion Government.

MUNICIPAL MISCELLANIES

BY CLINTON ROGERS WOODRUFF

HONORARY SECRETARY, THE NATIONAL MUNICIPAL LEAGUE

Annual Meetings.—Richard S. Childs, of New York City, was elected president of the National Municipal League at the 33rd Annual Meeting held in New York, November 10 and 11. He succeeded Frank L. Polk. The annual meeting of the American Civic Association took the form of a New England pilgrimage to Boston, Providence and the Connecticut Valley. The 4th annual meeting of the American Municipal Association was held at the University of Kansas, December 19-21. A. D. McLarty, Secretary of the Illinois Municipal League, was elected president. L. D. Taylor, Mayor of Vancouver, B. C., was elected president of the Union of Canadian Municipalities at the 27th annual meeting at Ottawa, June 7-9.

Municipal Publications.—There was published in 1927 for the first time a complete roster of municipal officials of the principal cities of the United States. It is known as the *Directory of American Municipalities*, published by the Directory of American Municipalities. (1005 Market Street, Philadelphia.) It is planned to make it an annual publication, and the 1928 Directory was ready in December, 1927. The contents are arranged in a convenient way: first, alphabetically by the name of the state, followed by the cities in alphabetical order. Under each state, information is given concerning the publication of state manuals and of names of city officials contained therein. For each city, the names of all elected and important appointed officers are given; in some

cases, street addresses are added; usually the date of the next election is stated; sometimes all the councilmen are listed. Following that, in some instances, there is a description of the city containing essential civic and business data. In every case, the name of the person or organization supplying the facts is given as authority.

The **Municipal Index** is published by the American City Magazine Corporation, New York. Its sub-title, "A yearbook for city, town and county officials and for all others interested in municipal progress and public improvement activities" defines its scope. It is now in its fourth edition. Like the earlier ones it combines directory, tabular and text summaries and classified advertising, the latter distributed throughout the volume, accompanying the text as subdivided into eighteen topical sections. It contains an atlas section, a synopsis by states of the various classes of municipalities, population statistics, list of names of important officials, a list of chambers of commerce and civic organizations and many other useful lists. Statistics of all kinds are plentiful and bibliographies follow each section.

The **Canadian Municipal Directory**, edited by H. Wisely Bragg, Montreal, is in its second year. The first section is a municipal directory proper, giving lists of urban and rural municipalities by provinces (numbering 105 cities, 469 towns, and 943 villages, a total of 1,517 urban municipalities; and 2,809 townships, coun-

COGNATE SOCIETIES

ties and other rural municipal entities, making a grand total of 4,326). About 20,000 names of officials are given. The reference section contains leading articles on various matters of municipal interest, a table of taxation and debt statistics for cities and towns, and a table of water-works statistics. Articles in French as well as in English are given in one part of the book.

Outstanding Books. — Two books dealing with municipal government were published during the year: Leonard D. White's *The City Manager* (See City Manager) published by the University of Chicago Press and Ernest F. Griffith's *The Modern Development of City Government in the United Kingdom and the United States* (published by the Oxford University Press, American Branch). No adequate comparative historical and descriptive study of American and British cities has appeared before this. Comprehensive histories of city government have been lacking for both countries. Hence this treatise

has a twofold value. The first volume comprises an historical treatment of city government in the two countries, not exhaustive, but emphasizing the comparative features. It is divided into three periods: pre-1870, 1870 to 1900, and 1900 to 1924.

Starting with a common legal basis and a social heritage much the same, each nation has developed a system essentially different from the other in structure, finance, and relation to the state. A study of this sort is of fundamental importance especially as the wants and needs are inherently similar for both peoples. The second volume takes up various broad aspects of city government in the two countries, its legal basis, function, framework, finance, state relations, quality, and the part played by public opinion; a final chapter summarizes the two systems in a brief analysis and criticism, and makes recommendations. The treatise is helpfully documented and otherwise annotated and carries an extensive set of appendices.

COGNATE SOCIETIES

AMERICAN CIVIC ASSOCIATION.—Union Trust Bldg., Washington, D. C.

AMERICAN MUNICIPAL ASSOCIATION.—Lawrence, Kansas.

AMERICAN SOCIETY FOR MUNICIPAL IMPROVEMENTS.—3817 Olive St., St. Louis, Mo.

BUREAU OF MUNICIPAL RESEARCH.—261 Broadway, New York, N. Y.

CITIES CENSUS COMMITTEE.—200 Fifth Ave., New York, N. Y.

CITIZENS' COMMITTEE OF ONE THOUSAND.—105 E. 22nd St., New York, N. Y.

CITIZENS' UNION OF THE CITY OF NEW YORK.—177 William St., New York, N. Y.

CITY PARLIAMENT OF COMMUNITY COUNCILS.—2240 Municipal Bldg., New York, N. Y.

CIVIC IMPROVEMENT LEAGUE.—233 Broadway, New York, N. Y.

CIVIL SERVICE FORUM.—1756 46th St., Brooklyn, N. Y.

INTERNATIONAL CITY MANAGERS' AS-

SOCIATION.—Fraser Hall, Lawrence, Kansas.

JUVENILE CIVIC LEAGUES.—Municipal Building, New York, N. Y.

MUNICIPAL LEAGUE OF AMERICA, INC.—250 W. 57th St., New York, N. Y.

NATIONAL ASSOCIATION FOR CONSTITUTIONAL GOVERNMENT.—716 Colorado Bldg., Washington, D. C.

NATIONAL CIVIC FEDERATION.—1 Madison Ave., New York, N. Y.

NATIONAL INSTITUTE OF MUNICIPAL RESEARCH, 261 Broadway, New York, N. Y.

NATIONAL MUNICIPAL LEAGUE.—261 Broadway, New York, N. Y.

NATIONAL SECURITY LEAGUE.—25 W. 43rd St., New York, N. Y.

NATIONAL URBAN LEAGUE.—127 E. 23rd St., New York, N. Y.

PROPORTIONAL REPRESENTATION LEAGUE.—1417 Locust St., Philadelphia, Pa.

SENTINELS OF THE REPUBLIC.—Home Life Bldg., Washington, D. C.

SHORT BALLOT ORGANIZATION.—8 W. 9th St., New York, N. Y.

DIVISION VI

TERRITORIES AND SPHERES OF INFLUENCE

ALASKA AND HAWAII

BY FRANK MCINTYRE

MAJOR-GENERAL, U. S. A.; CHIEF OF THE BUREAU OF INSULAR AFFAIRS

ALASKA

Conditions.—Governor Parks reports the improvement in general conditions, noted during the preceding year, has continued. General health conditions were good. Customs reports show that there was a notable increase in the value of imports and exports, the balance of trade in favor of the Territory amounting to \$47,955,000, an increase of \$18,656,000 over last year. The increase in exports is accounted for by the unusually large catch of salmon. Commerce, foreign and domestic, reached a total of \$112,081,000, as compared with \$92,844,000 for last year. The exports were valued at \$80,018,000 and the imports \$32,063,000. The report of the treasurer shows that the Territorial finances are in excellent condition. There was a decline in the value of the mineral production due chiefly to curtailed production in the copper mines and lower prices in the copper market.

Record Salmon Pack.—The pack of canned salmon, 6,653,000 cases, was the greatest in the history of the Territory, exceeding that of the previous largest pack, 1918, by 47,000 cases. This was the outstanding feature of the year. All fishing districts in Alaska shared the prosperity. This extraordinary abundance of salmon along the entire coast must be attributed to widespread favorable conditions in the sea, the nature of which is unknown. The production of the halibut fisheries increased 31 per cent over that of 1925. The value of the products from the whaling industry

increased slightly. Five hundred and eighty-one whales were caught. There was an increase in the seal herds due to the protection afforded by the Government. The value of land fur-bearing animal pelts shipped from the Territory is estimated to be \$2,350,000.

Grazing Lands.—Last year Congress authorized the leasing of grazing lands in Alaska. This is of utmost importance to the reindeer industry. The herds are increasing so rapidly that some steps must be taken to protect the ranges from overgrazing. The most serious problem confronting the industry is that of disposing of the surplus animals.

Oil-drilling operations that had been in progress in the Cold Bay region of the Alaska Peninsula for approximately three years have been suspended and the holes that were drilled were definitely abandoned. Slight showings of oil and a strong flow of gas were encountered, but these were not of commercial importance. The only petroleum produced in Alaska comes from wells of the Chilkat Oil Co. in the Katalla field.

Mining and Quarrying.—The Federal Government and the Territory are endeavoring to stimulate mining, the former by the construction of roads and trails and the latter by participating in trail construction and also by offering to pay transportation in certain instances to bona fide prospectors. The largest operations at the present time are found in the vicinity of Fairbanks and Nome. There modern methods are

superseding the more expensive systems that characterized the early operations, and where a few years ago there were few dredges in operation, more than 60 per cent of the gold is recovered by these devices. The production of gold from the Seward Peninsula increased because of the extensive dredge mining.

For many years the production of copper has exceeded all other minerals. During the year 67,778,000 pounds of copper, valued at \$9,489,000 was produced. The coal-mining industry shows little improvement. Practically all of the production comes from the mines in the Matanuska Valley and the Healy River field. The domestic consumption of coal is less than 160,000 tons per annum and last year about 70,000 tons of this was imported.

There are extensive deposits of marble in southeastern Alaska, but only one quarry is operating. The deposits are favorably situated near tidewater and the marble is of excellent quality for building, some even approaching statuary grade.

Paper and Lumber.—The possibility of utilizing the extensive coastal forests of Alaska in the manufacture of paper has been known for many years; in fact, a small pulp mill was constructed in southeastern Alaska several years ago, but until last year practically no progress was made in the development of the industry. It is estimated that the national forests of the Territory are capable of producing 1,300,000 tons of newsprint annually in perpetuity, and that there is approximately 500,000 available horsepower in the undeveloped power projects. The lumber industry in southeastern Alaska and Prince William Sound is constantly expanding along with increasing general development of these regions. The timber cut of the national forests for the calendar year 1926 was 55,761,000 board feet.

Experiment Stations.—Four agricultural experiment stations are in operation at the present time, viz., Matanuska, Fairbanks, Sitka and Kodiak. The Matanuska station is in the heart of the region in which dairying can be made a success. The

Fairbanks station is devoted primarily to plant breeding. In addition to plant breeding experiments, an animal breeding experiment is in progress to obtain a hardy beef animal which will thrive in the arctic and subarctic regions. At Sitka station experiments are conducted in horticulture, olericulture, and floriculture. This station is located in a region which typifies average conditions in southeastern Alaska. The results obtained demonstrate the possibilities of growing fruits and vegetables in home gardens and growing bulbs, shrubs, and other plants for ornament. The Kodiak station has been used for experiments in beef cattle. A small herd of Galloways is maintained on native grasses.

Transportation.—Progress was made in completion of the Alaska Railroad and modernization of equipment. For the first time in its history the deficiency from operation was less than \$1,000,000. The revenue increased 26.6 per cent, while the cost of operations and maintenance increased 3.9 per cent. Operating ratio decreased from 199.9 in the previous year to 164.8. The total deficit decreased \$420,000. There was a general increase in the shipments of all commodities, especially in mining machinery and supplies. The train service was improved to meet the demands of the increased traffic during the tourist season.

There is a distinct improvement in transportation facilities in the lower Yukon River. During the year 41 miles of new roads were under construction within the national forests. In addition to this, approximately 168 miles of roads were improved and maintained. The progress in the development of aviation in the Territory is worthy of note. There are 44 landing fields in the Territory and three transportation companies operating eight commercial airplanes.

HAWAII

General Conditions.—W. R. Farrington, who was reappointed Governor July 5, 1925, states that Hawaii in all its domestic affairs has enjoyed a full measure of health, prosperity and commercial progress.

VI. TERRITORIES AND SPHERES OF INFLUENCE

The outstanding event of the year was the Pan-Pacific Conference on Education, Reclamation, Rehabilitation and Recreation called by the President, under the authority of Congress, to meet in Honolulu the week of April 11 to 16, 1927. This Conference served to further impress on the public mind the strategic value of Hawaii as a center for the study and development of the arts of peace in the Pacific area. The following

nineteen countries were represented: United States, Palestine, Hawaii, Colombia, Canada, Peru, Australia, India, Japan, France, New Zealand, China, Mexico, Fiji, Korea, Great Britain, Nicaragua, Samoa, and Chile.

Population.—The total population of Hawaii estimated June 30, 1927, is 333,420, of which 217,618 are American citizens. The racial classification follows:

Ancestry	American and European	Hawaiian	Part Hawaiian	Filipino	Japanese	Chinese	Others
American citizens....	60,944	20,931	24,645	7,148	79,278	14,421	10,251
Aliens	3,997	.....	.....	44,976	52,964	10,777	3,088

Civic Standards.—Indicative of the civic standards of the people of the Territory, 87 per cent of the registered voters cast their ballots in the general legislative and municipal elections of 1926. Savings-banks deposits have steadily increased. The balance sheet is distinctly favorable to Hawaii. Never in the modern history of the Islands has there been greater freedom from absentee landlordism. The citizens and residents have faith in the industries and believe that Hawaii is a good place to live. Profits made within the Territory are returned to investment in local enterprises. Labor is employed at fair wages, and there is no observable discontent. The Territory this year paid a larger sum into the Federal Treasury, through the division of internal revenue and the custom house, than did any one of some thirteen states.

Transportation.—Recreation is the new industry, sometimes called the tourist industry. Millions of dollars have been invested by the taxpayers of Hawaii in excellent highways on each principal island of the group. Honolulu has 22,000 privately owned motor vehicles. The tourist travel to Hawaii has doubled in the last five years.

Hawaii owns and is developing two airports, one about five miles west of the center of Honolulu, and known as "John Rodgers Airport." Territorial landing fields on each of the

principal islands are in process of construction.

Extension of the harbor facilities of Honolulu Harbor is the new development initiated in the year under review. Construction of docks and terminals in the harbors of Honolulu, Oahu; Hilo, Hawaii; Kahului, Maui; and Nawiliwili, Kauai, has proceeded normally. Modern docking facilities for prompt handling of passengers and freight are provided at the principal ports named. This has kept pace with and in some instances is ahead of the deep-water development and breakwater construction carried forward under authorization of Congress through national harbor appropriations. The port of Hilo bids fair to be of increasing importance in trans-Pacific commerce. The breakwater is being extended under a Federal contract.

Legislation.—The Territorial Legislature in regular session failed to reach an agreement on the general appropriation and loan appropriation measures. The session was extended by the Governor for five days, during which the appropriation bills were passed. Both Houses passed resolutions calling on the Governor to exercise his authority to reduce expenditures.

The Territorial budget system was authorized by Act 56, approved in 1925. The formative stage has been successfully passed and the importance of the Bureau of the Budget

in the general financial scheme of the government of the Territory has been accepted freely by all departments.

Finance.—Thorough reorganization of the accounting methods of Hawaii and its municipal divisions has made excellent progress under the direction of the commission of public accountancy. Accounting and statistical classifications have been made uniform. A standardized system of assessment, collection and bookkeeping methods has been installed. The income for the year was \$10,454,000 and the expenditures \$9,203,000.

The one hundred and fiftieth anniversary of the discovery of the Hawaiian Islands by Captain James Cook will be celebrated in 1928.

Cane-sugar production has been the basis of Hawaii's prosperity since 1876, when the reciprocity treaty was negotiated between the then Hawaiian monarchy and the United States. This industry has thrived under the protection of the tariff that has enabled the sugar plantations of Hawaii to pay the higher costs of production, resulting from the higher wages and better housing conditions offered workers in the cane fields of Hawaii as compared with any foreign country. The sugar crop of 1927 bids fair to be the largest ever produced in Hawaii, approximately 800,000 tons. The acreage under cultivation remains about the same. The tonnage of sugar produced for the five years ending September 30, 1926, follows: 1922, 609,000 tons; 1923, 545,000; 1924, 701,000; 1925, 776,000; 1926, 787,000. The reasons for this increase are—first, the development of better varieties of cane and a more widespread planting and more careful selection of seed, resulting in heavier yields; second, the reduction of losses due to insect and cane diseases through more scientific control; third, the principal cause, better agricultural methods. There is a more general custom of getting the crop earlier in the year and starting the ratoon and plant crops not later than early summer. This results in the cane having the benefit of two summers' growth, which produces a much heavier stand.

All sugar plantations provide free

dwelling, water, fuel, medical, surgical and hospital service for laborers and their families, and laborers are given employment throughout the year. Plantations have hospitals, theaters, dairies, nurseries, kindergartens, clubhouses, community houses, stores, markets, churches, etc., and are complete communities in themselves. Between \$10,000,000 and \$12,000,000 are invested in dwellings for employees alone. On many plantations milk is supplied the laborers at cost or less from plantation-owned dairies operated under permits from the Health Department, and staple food supplies are sold at cost and delivered from plantation stores. One plantation alone expended a quarter of a million dollars to insure a pure water supply for its employees.

Other Products.—The pineapple industry is continually acquiring additional lands for cultivation. The 13 pineapple canneries operating last year packed a total of 8,940,000 cases of pineapples. The coffee industry, though relatively small, is of no mean proportions. Ranches for beef and dairy cattle are improving the number and the quality of the herds. Hawaii does not yet supply its own market with sufficient beef or dairy products. Large quantities of butter and beef are purchased from the mainland of the United States, Australia and New Zealand.

Experiment Station.—The Federal Agricultural experiment station is controlled from the Department of Agriculture in Washington. Its service is based on the principle that a further development of a number of the minor agricultural and horticultural crops should be fostered in order that as much as possible of the available land of Hawaii not adapted to the major industries may be profitably utilized.

Education.—The public schools are administered under the centralized control of the Superintendent of Public Instruction and commissioners from the principal islands. These officers are appointed by the Governor and confirmed by the Territorial Senate. Salaries of the public school teachers are provided through specific property taxes levied on the basis of

VI. TERRITORIES AND SPHERES OF INFLUENCE

the number of pupils. Every effort is being centered on vocational training to interest Hawaii's young people in their own industries. The total expenditure for public schools for the calendar year ended December 31, 1926, was \$4,962,610.52.

Language Schools.—Hereafter the language schools will run on their own initiative and without any government supervision. Following the long legal battle as the result of which the United States Supreme Court ruled the alien language school laws unconstitutional, the Legislature reimbursed the school for fees paid in by "nonlitigating" language schools.

The University of Hawaii, supported by the Territory, has 700 students studying for degree.

Health.—Satisfactory health conditions are reflected in the annual death rate, the lowest in the history of Hawaii. The birth rate for 1927 was 37.16 per 1,000 population, slightly lower than for 1926. The death rate for 1927 was also lower, 11.87 per 1,000 population. The infant mortality rate for 1927 was 95.97; this is the first time it has ever fallen below 100.

Medical inspections of the children of public schools are made throughout the Territory by Territorial physicians of their respective districts and by staff physicians in Honolulu. The majority of the sugar and pineapple plantations and canneries maintain their own medical staff and hospitals for the care of their employees.

HAWAIIAN TRADE IMPORTS AND EXPORTS, FOREIGN AND DOMESTIC (Fiscal years 1925 and 1926)

Countries	Imports		Exports	
	1925	1926	1925	1926
Australia	\$ 386,754	\$ 366,557	\$ 8,399	\$ 18,169
British India	1,542,825	1,270,045	1,320	1,243
Chile	2,460,981	2,848,006	.....	.....
Japan	3,521,299	2,977,438	112,519	112,591
New Zealand	696,450	529,867	39,406	41,132
Philippine Islands	365,463	370,827	681,422	757,221
Other foreign	1,913,977	1,891,825	1,001,716	953,723
Total foreign	\$10,887,749	\$10,254,565	\$ 1,844,782	\$ 1,884,079
United States	72,952,949	76,262,624	102,780,509	98,260,941
Grand Total.....	\$83,840,698	\$86,517,189	\$104,625,291	\$100,145,020

DOMESTIC EXPORTS BY ARTICLES (Fiscal years 1925 and 1926)

	United States 1926	Foreign 1926	Total 1926	Total 1925
	Value	Value	Value	Value
Sugar	\$59,043,367	\$ 28	\$59,043,395	\$63,300,529
Coffee	471,560	404,621	876,181	1,380,638
Fruits and Nuts.....	34,232,506	861,271	35,093,777	34,688,425
Rice	5,533	.....	5,533	8,285
Hides	138,748	.....	138,748	162,990
Other	4,340,483	603,670	4,944,153	5,048,096
Total	\$98,232,197	\$1,869,590	\$100,101,787	\$104,588,963

PORTO RICO

BY FRANK MCINTYRE

MAJOR-GENERAL, U. S. A.; CHIEF, BUREAU OF INSULAR AFFAIRS

GENERAL CONDITIONS

External Trade.—The tone of Governor Towner's report is markedly optimistic. The most encouraging feature is the external trade, ninety per cent of which is with the United States. The exports from the Islands have increased annually from \$82,000,000 in 1923 to \$108,000,000 in 1927. In 1900 this total was \$6,600,000. The imports have likewise increased annually from \$72,000,000 in 1923 to \$99,000,000 in 1927. In 1900 this total was \$10,000,000. The increase of \$26,000,000 in the exports of 1927 as compared with 1923 is largely accounted for by the following four items:

Sugar	\$ 8,500,000
Coffee	2,600,000
Unmanufactured Tobacco.....	11,000,000
Fruit	2,600,000

Sugar Production in Porto Rico has shown marked improvement. In the last three years, there has been 660,000, 603,000 and 627,000 short tons, respectively. For the three years preceding, production was 408,000, 379,000 and 447,000 short tons, respectively. This increase is credited to the cooperation of the local department of agriculture with the sugar planters in developing and utilizing improved disease-resisting varieties of cane and better methods of cultivation. The coffee production per acre is not as great as experts believe it should be. Tobacco production shows a marked increase.

Needs.—Porto Rico's greatest needs are emigration to relieve the pressure of excessive population and new industries to give employment to a greater number of people. The United States offers a fertile field for Porto Rico's excess population and the Porto Rican Government is turning its attention to the encouragement of new industries.

Secretary of War's Visit.—Secretary of War Davis visited Porto Rico in March. He was impressed with

the progress evident and was charmed with the beauty of the Island referred to by the late Theodore Roosevelt as the "Switzerland of America." Every year more and more continental Americans are visiting its shores.

Edgar R. Kiess, Chairman of the Committee on Insular Affairs of the House of Representatives, and several members of the House, visited Porto Rico after the adjournment of Congress for the purpose of getting into closer contact with the affairs of the Island. They attended a joint session of the Legislature held in their honor and were the recipients of numerous other courtesies during their stay.

POLITICAL

Want Governor Elected.—Governor Towner visited Washington in November and laid before the President a memorial submitted by the leaders of the Porto Rican Legislature in which they requested the election of their Governor. At present the Governor is appointed by the President.

Amendments.—The Organic Act was amended by an Act approved March 4, 1927. The principal changes were in the limits of public indebtedness, which in the case of municipalities other than San Juan and Ponce were reduced from 10 per cent of the aggregate tax valuation of their property to 5 per cent; that no suit for the purpose of restraining the assessment or collection of any tax imposed by the laws of Porto Rico shall be maintained in the District Court of the United States for Porto Rico; that all citizens of the United States who have resided or who shall hereafter reside in the Island for one year shall be citizens of Porto Rico; a clarification of the duties of the Auditor; that the Legislature instead of meeting bi-annually will meet annually; providing for a public service commission.

EDUCATION

Language.—Porto Rico spent one-third of its income on public education. The progress made is highly creditable. The task which Porto Rico has assigned to itself of conserving the Spanish language and acquiring the English language has resulted in improving the Spanish as spoken in Porto Rico on American occupation, while at the same time, giving to a substantial part of the people a good knowledge of the English language. Porto Ricans, in a larger proportion than any other people, have today a knowledge of both English and Spanish.

The University of Porto Rico has a College of Business Administration cooperating with Boston University; a School of Tropical Medicine in cooperation with Columbia University; a Department of Spanish which has been strengthened and broadened into a Department of Spanish studies in cooperation with Centro de Estudios Históricos of Madrid and the Department of Romance Languages of Columbia University. The National Academy of Sciences has proposed that a School of Tropical Research be instituted, preferably in Porto Rico.

FINANCES

Public Debt.—Porto Rico's ambition to push ahead in the construction of good roads, public buildings and irrigation projects has led to a material increase in its bonded indebtedness and is a contributing cause of a certain financial stringency. To relieve this a floating debt was contracted which amounted on July 1, 1925, to \$5,025,000. A year later it stood at \$4,100,000 and during the past year it has been further reduced by \$900,000, so that on July 1, 1927, it amounted to \$3,200,000. The payment of such large amounts on the floating debt has resulted in a weakness in the Government's working capital position.

Revenues.—Operating revenues of the Government during the fiscal year ended June 30, 1927, were \$11,191,893. This was a reduction of \$548,491 below the amount for the previous year. The principal items

showing reductions were the tax on incomes which was reduced from \$3,079,870 in 1925-26 to \$1,565,746 in 1926-27, and the U. S. Internal Revenue tax which was reduced from \$987,849 to \$440,650. The reduction in the Income Tax as compared with the previous year was caused by the fact that the amount received for the year 1925-26 included the retro-active collection which amounted to over \$800,000. The very low price of sugar during the entire year 1926-27 also caused a much diminished return on the income tax item.

The other item showing a considerable reduction was the U. S. Internal Revenue and that was caused by the reduction made by Congress on cigars and cigarettes, which reduced the revenue return in Porto Rico more than one-half. However, there was a substantial increase made in the amount of excise taxes from \$4,596,918 in 1925-26 to \$5,701,502 in 1926-27; and in the new university tax the increased revenue amounted to \$345,091. Operating expenses of the Government were \$10,761,739, an increase of \$658,805 over the preceding year. The increases shown were unavoidable. Almost one-half was caused by the storms which visited the Island during July and September last year causing landslides and washouts on many of the roads and damage to some of the bridges. The cost of rehabilitation was \$284,000.

The Insular bonded debt on June 30 amounted to \$22,965,000. Sinking funds amounted to \$1,662,603, bringing the net indebtedness of the Island to \$21,302,397. The Organic Act provides that "no public indebtedness of Porto Rico shall be authorized or allowed in excess of ten per centum of the aggregate tax valuation of its property." The present tax valuation of the Island is \$338,089,889. As showing the high value Porto Rico bonds are held in the market, the new Isabela Irrigation bond issue sold in New York, April 14, 1927, at 108.226 or at a premium of \$43,186. The amount was \$525,000, and the rate of interest 4½ per cent.

Improvements.—It may be stated that about \$8,000,000 of the bonded debt of Porto Rico is for general pub-

DISTRICT OF COLUMBIA

lic improvements, such as the Capitol Building, an Insane Asylum, a Penitentiary; a leper Asylum, a Girls' Reform School, Hospitals and School Buildings. About \$7,000,000 has been expended on permanent public roads and bridges. About \$8,000,000 has been expended for Irrigation Works and Harbor Improvements. The bonds issued for the construction of Irrigation Works and Harbor Improvements are not a burden on the Island as a whole, for the Irrigation debt, principal and interest, is paid by a tax levied only on lands receiving the benefits of the irrigation, and the Harbor Improvement bonds are entirely met by harbor dues which more than pay in full principal and interest.

PUBLIC WORKS

Roads and Buildings.—Ninety-two kilometers of new roads were built during the year. Twenty-one new bridges were constructed. \$1,319,016.49 was expended in the maintenance of roads. The Capitol Building will probably be ready for the occupancy of the Legislature at its next session. The School of Tropical Medicine, allied with Columbia University of New York, was completed. There are other important public buildings under construction. Nearly 80 new

school buildings were constructed for the municipalities and a number of other municipal projects completed.

Irrigation.—The only completed irrigation system is that with headquarters at Guayama, which was practically finished in 1913. This, in addition to irrigating a large area in the southern section of the Island, has quite an extensive hydro-electric system. The Commissioner of the Interior has under study and in contemplation a very large extension of these systems, both irrigation and hydro-electric. There is now under construction the Isabela Irrigation Service. The Legislature authorized the issue of \$3,325,000 of bonds for this project, the last \$475,000 of which were recently sold. The Commissioner anticipates that delivery of water to the irrigable lands may be started in January, 1928.

Health.—Health conditions are constantly improving in Porto Rico. Two model municipal health units are now operating. The Department of Health is cooperating with the schools in imparting knowledge on health. The fight against uncinariasis has been carried on, as is the effort to control malaria. An intensive study is being made of the malaria resulting from the irrigation of sugar lands.

DISTRICT OF COLUMBIA

BY WARREN REED WEST

ASSISTANT PROFESSOR, GEORGE WASHINGTON UNIVERSITY

Public Utilities Commission.—Important legislation relating to the Public Utilities Commission of the District of Columbia was passed by the 69th Congress at its second session. An Act, approved December 15, 1926, provides for a new Public Utilities Commission to take the place of the old one which had consisted of the three commissioners of the District of Columbia. The new commission is to consist of: 1. The Engineer Commissioner of the District of Columbia, and 2. Two persons appointed by the President by and with the advice and consent of the Senate. The

two commissioners first appointed are to be for terms of two and three years respectively and their successors for three-year terms. With the exception of the Engineer Commissioner, these commissioners are not to hold any other public office and must have been residents of the District of Columbia for the three years preceding appointment. No person is to be eligible who has within five years been interested in a public utility of the District, and if any commissioner shall voluntarily become so interested his office is to be ipso facto vacant. In the interest of the public the new

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Act also provides that a new officer, known as the "people's counsel," is to be appointed, with a four year term, whose salary, \$7,500, is the same as that of the members of the Commission, and whose duty is to appear for the people of the District, represent petitioners, and investigate service, rates and valuations. He must have been a resident of the District for five years, and must not have been interested during the last five years in a District public utility.

The reason for the change in personnel was the belief that the Commissioners of the District had too many other duties to give proper attention to their duties with the Public Utilities Commission. A subsequent Act, approved March 3, 1927, provides that the expenses of investigations, valuations and other proceedings made by the Commission shall be borne by the public utility concerned, under certain limitations mentioned in the Act. It was argued in support of this measure that when the utility went to great expense in making a valuation of its property, with the purpose of securing an increase in rates, the public had to pay for the valuation, and that the public might properly pay the expense in the same way for the Commission's valuation proceedings which might lead to keeping rates down.

Guardians and Committees.—An Act, approved February 10, 1927, dealing with the estates of lunatics is of interest to the country as a whole. Insane veterans are sent to St. Elizabeth's Hospital from all sections of the United States. It had been found that one person was acting as a committee for 93 veterans of the World War, had acted in 44 other cases, and had received since and including 1919, \$88,001.29 from these cases. In most cases he had been allowed from 5 to 10 per cent on the personal property and income. The bill fixes 5 per cent as a maximum. The bill also provides for a guardian ad litem to act for the non compos mentis person in case he has no known relative residing within the jurisdiction of the court, at the appointment of the committee or trustee. Another Act, approved February

10, 1927, provides a maximum of 5 per cent instead of the 10 per cent in the old law, allowed to guardians in the District. These Acts were followed by an Act, approved March 3, 1927, which limits to five the number of non compos mentis persons for whom any single person may act as committee or trustee. Another Act of the same date applies the same rule to guardians of infants, except in the case of trust companies or where such infants are of the same family.

Woman Jurors.—An Act, approved February 26, 1927, provides that no person shall be disqualified for service as a juror or jury commissioner by reason of sex, but that such jury service shall not be compulsory on women.

Assessments.—An Act, approved February 9, 1927, provides that assessments for paving or repaving shall not be levied against abutting property where the property has already been assessed for paving. It was believed that with the development of motor vehicles the general public, and not the abutting owner, was responsible for deterioration of the streets, and that the existing law placed a hardship on property owners in that motor vehicles with heavy loads had use of the streets without proper restrictions as to weight and width of tires.

Practice of Pharmacy.—An Act, approved March 4, 1927, changes the law in regard to the practice of pharmacy, the main feature being that in the future a person seeking to practice pharmacy in the District must be a graduate of an accredited school or college of pharmacy, and possess three years' experience under a licensed pharmacist or at the school or college. The old law permitted licensing upon four years subordinate experience, in lieu of the college education in pharmacy and three years experience. Reregistration must be made every three years, thus making it easier to terminate the license in the interest of the public. The old law provided special examinations for pharmacists dispensing homeopathic remedies and prescriptions, whereas the new law makes no distinction be-

PHILIPPINE ISLANDS

tween homeopathic and other pharmacists.

National Representation.—Committee hearings have been held upon a proposed constitutional amendment giving the residents of the District the status of citizens of a State, for the purpose of representation in Congress with one or two Senators as

determined by Congress, representation in the House of Representatives on the basis of population, presidential electors equal to the number of Senators and Representatives, and the right to sue and be sued in the courts of the United States under the provisions of Article III, Section 2.

PHILIPPINE ISLANDS

BY FRANK MCINTYEE

MAJOR-GENERAL, U. S. A.; CHIEF, BUREAU OF INSULAR AFFAIRS

GENERAL CONDITIONS

Gen. Wood.—The most important event in Philippine history in 1927 was the death of its Governor General, Leonard Wood. President Harding selected General Wood to head the mission that was sent to the Philippines in 1921 to make a survey of conditions there. He left the United States on April 9, 1921, and after completing his work on the Wood-Forbes Mission was appointed Governor General of the Islands. In accepting the task General Wood gave up the important post of Chancellor of the University of Pennsylvania. In the Philippines he labored early and late, and by frequent inspection trips throughout the Islands became intimately familiar with conditions in every locality.

General Wood went to the Philippines already known as an able administrator; for his great work in Cuba had brought him international renown, and his work in the Philippines has added to his fame.

Never has the administration of the Philippine Islands been in so satisfactory and promising condition as in 1927. Never have the people of the Islands been so prosperous and with such fair outlook for their commercial future. This situation is the result of the policies pursued by the United States in the government of the Islands, reinforced by a sterling administration of affairs in the Islands for the past six years. General Wood's services to the Philippine Government will be the more appreciated with the passage of time. The

Filipino people united throughout the Islands in showing their admiration and respect for him. During the absence of General Wood from the Islands Vice Governor Eugene A. Gilmore was Acting Governor General and he continued in that capacity till the appointment of ex-Secretary of War Stimson in December, 1927.

The Cuban Legislature has recently passed an act giving a pension of \$6,000 a year to General Wood's widow, as a token of the gratitude of the Cuban people.

Political.—The political situation has continued about the same as in the preceding year, the two most notable events being the issuance by the Governor General of an executive order abolishing the Board of Control; and the President's message vetoing the bill for taking a plebiscite on independence. This veto letter was published in the Islands in English, Spanish and seven of the principal local dialects.

Attitude of People.—In his last annual report, for the year ending December 31, 1926, General Wood stated that in the course of numerous inspection trips to all parts of the Archipelago he found the people living under better health conditions, generally prosperous and contented and more than ever appreciative of the benefits of American sovereignty and of the vital importance of free trade relations with Continental United States. He stated further that such inspection trips are necessary, in order to see through personal observation how the government

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is being conducted, especially in the more remote sections of the Archipelago; to correct abuses and irregularities and listen to numerous complaints which people will make only to the Governor General in person; and also through public meetings to give the people a chance to voice their wishes.

These personal inspection visits were generally made without previous notice and have a most beneficial effect upon local administration. General Wood considered them one of the most valuable aids in securing an effective government. He reported that further extension in education, health, communications and public works is largely dependent upon economic progress. Without placing an undue burden upon existing taxable values and business activities, the present income of the government cannot be materially increased unless larger taxable values are created and business is extended by the encouragement of the investment of capital, both local and outside.

GOVERNMENT

Present Condition.—The finances of the Philippine Government are today in excellent shape. On December 31, 1926, government currency in circulation in the Philippines consisted of \$42,394,126 in treasury certificates and \$10,762,187.30 in silver and subsidiary coins. To secure this circulation and to maintain its parity with gold, two funds are provided. These funds on that date were \$2,579,388.29 and \$12,000,000, respectively in excess of the minimum legal requirements.

The bonded indebtedness of the Philippine Government is \$79,648,500, against which there is held in the treasury of the Philippine Islands \$4,884,500 provincial and municipal bonds, \$3,000,000 bonds of the Metropolitan Water District, and sinking funds amounting on December 31st last to \$16,839,159.88, leaving a net indebtedness of the government of \$54,924,840.12. It should be noted that in the past two years all investments in the Philippine Government sinking funds, other than bonds of the Philippine Government,

have been transferred to the general funds of the government, being replaced by cash, so that the security of sinking fund investments may not now be questioned.

Fiscal Affairs.—Briefly, with a net public debt of \$55,000,000, the Philippine Government has on hand \$37,500,000 cash in addition to the amounts necessary to secure its currency system; and has invested \$66,000,000 in non-governmental enterprises. It is generally known that this investment will result in a large loss to the government. Notwithstanding this probable deficit, with efficient management of the various enterprises a very material return to the government may be expected. The government has invested in useful public works \$44,000,000, not including \$10,000,000 in irrigation works and in the cadastral survey, which amount in great part should be gradually repaid to the government. This evidences the extent to which the Philippine Government has operated on its revenues. While the authority to borrow has been utilized and the favorable terms under which loans have been made through the issue of tax-exempt bonds have been beneficial to the government, yet there has been no disposition to contract debt unnecessarily or to avoid the payment of current expenses from current revenues.

ECONOMIC CONDITIONS

Dearth of Capital.—The outstanding cause of the lack of economic development of the Islands is the absence of capital which means the lack of investment of outside capital, and this is largely due to the lack of suitable land and immigration laws. During the calendar year 1926 a withdrawal of capital occurred from the Philippine Islands in excess of new capital introduced. The showing of the government in its finances is the more creditable because of this situation. In the calendar year 1925, 101,000 metric tons of rice were imported. In the calendar year 1926 this total was reduced to 70,500 metric tons. This seems to show very satisfactory progress in meeting one of the marked weaknesses of Phil-

ippine agriculture; that is, a failure to produce an ample supply of the principal article of food.

Rice.—The accurate statement of the amount of rice imported is believed to be a better measure of production in the Islands than is the statement of production itself. So many elements enter into the determination of production as to leave a grave doubt of its reasonable accuracy. The imports of rice in the past, however, have varied widely and by no means in a uniform direction. This is the result of agricultural conditions in the Islands and particularly of the fact that agriculture in the Islands has recourse to insufficient capital.

Sugar.—This is well illustrated by sugar production. In the calendar year 1925 the export of centrifugal sugar was 459,000 metric tons. In 1926 it was 339,000 metric tons. This falling off was accounted for partly by unfavorable weather conditions; but as a matter of fact it was due largely to decreased area cultivated, and decreased production due to a lessened use of fertilizer, the latter two items being the result of a lack of funds to maintain the standard of cultivation of the preceding year. In the fiscal year ending June 30, 1927, exports of centrifugal sugar amounted to 435,000 metric tons, showing a prompt response to the greater availability of funds to the sugar planters. So long as this great fluctuation of production continues, there need be no fear that Philippine sugar will materially affect the United States market.

The American participation in the exterior trade of the Philippine Islands was maintained at about what has become the normal percentage. Of those Philippine products peculiarly favored by free admission to the American market there was a falling off in sugar and cigars and an increase in cocoanut oil, desiccated cocoanut and embroideries.

EDUCATION

Enrollment.—There have been slight decreases in the total annual enrollment, in the number of teachers and primary schools and a slight increase in the intermediate and secondary

enrollments. The total annual enrollment decreased from 1,096,758 to 1,061,612. This decrease was anticipated because of the closing of schools in which the attendance did not justify maintenance. The intermediate enrollment increased and compared with the primary grades, intermediate classes involve a greater expenditure for salaries, a greater number of teachers, and a greater outlay for equipment. There were 25,322 teachers employed in 1926, only 294 of whom were Americans; as against 25,701 in 1925 with 310 Americans.

The decrease in American teachers, largely due to inadequate salaries, is to be greatly regretted. The other statistics, however, indicate an effort to carry out the recommendations of the Monroe Survey Commission by improving the quality of instruction rather than to continue an indefinite expansion at the expense of efficiency. The appropriations for the year were practically the same as the year before. The appropriation act passed in 1926 contains an increase available in 1927 of \$500,000 for the better operation and maintenance of elementary schools and approximately \$350,000 for new school buildings. This will permit of a moderate amount of carefully considered expansion under conditions which will insure efficiency.

Following the recommendations of the Monroe Survey Commission, the office of Commissioner of Private Education was reorganized with additional personnel and vigorous steps have been taken to improve the private school situation. As a result of closer inspection some of the poorest of the private schools have been closed. Enrollment increased from 81,884 in 1925 to 88,001 in 1926. Most of this increase is in the secondary grades.

PUBLIC HEALTH

Difficulties.—While public health conditions have steadily improved during recent years and the Islands have been kept practically free from the quarantinable diseases, the problem of improving health conditions remains one of the most difficult tasks which confronts the government. The difficulties of the problem will be bet-

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ter understood when it is remembered that we have 12,000,000 people scattered among the Islands of the Archipelago; that the means of communication are limited and funds still more so; that there are few doctors and few nurses; that there are large areas without drug stores, and only such medicines can be secured as are distributed through the schools and can be procured through the Philippine Health Service.

For the year 1926, statistical returns available indicate a slight increase in the death rate. This apparent increase is undoubtedly chiefly due to the fact that greater effort was made to obtain records of all deaths, a matter attended with obvious difficulties, especially in remote parts of these Islands, partly to an increase in the prevalence of certain communicable diseases.

Cholera.—The cholera outbreak which began in 1925, coincidentally with outbreaks at many other points in the Far East, was completely suppressed by the end of March; there were 213 deaths. Final eradication was due to thorough vaccination of the population in the affected areas. More than 2,500,000 doses of cholera vaccine were injected during the year. Dysentery reached epidemic proportions during the rainy season in Ma-

nila and in several of the provinces, causing 8,175 deaths. Epidemics of measles occur here at about five year intervals. While in 1925 but 423 deaths were recorded, in 1926 there were 2,446.

Hygiene.—The continued prevalence of intestinal infection indicates that the greatest need of the people at the present time is proper education along public health lines. In order that officers of the Philippine Health Service, and other physicians, may be specifically trained in the prevention of diseases an appropriation was approved for the establishment of a School of Hygiene and Public Health in the University of the Philippines.

Lepers.—The results being obtained in the treatment of lepers continue to be most encouraging. During the year 114 more lepers were given their final discharge as cured and 219 who had become negative were paroled; 217 others became negative and are awaiting parole. In the Culion Leper Colony there are 5,200 lepers. The Culion Medical Board and the Philippine Islands Leprosy Research Board have worked out a plan for the management of leprosy which, when it can be put into practice, in all its details, will within about fifteen years, it is believed, make leprosy as rare here as it is in the United States.

VIRGIN ISLANDS, GUAM AND AMERICAN SAMOA

By BEVERLY A. HARTT

LIEUTENANT, UNITED STATES NAVY

VIRGIN ISLANDS

General Conditions.—Governor M. E. Trench, Captain, U. S. Navy (retired), who had held that office since September, 1925, died January 6, 1927, while on leave in the United States. The Government Secretary assumed the duties as Acting Governor until the inauguration March 1, 1927, of the present Governor, Captain Waldo Evans, U. S. N. (retired).

Conditions in the Islands have been normal and settled. The year was marked by an Act of Congress granting citizenship to the people of the

Virgin Islands. The Act also authorized the District Court of the Islands to confer citizenship by naturalization on aliens residing there and who should apply therefor.

The population was 26,051 in 1917, when the last official census was taken. In the early part of 1927 an informal enumeration showed the population to be 20,728, which, believed to be a fair estimate of the population, shows an apparent decrease of twenty per cent in the past ten years. This loss is the result of emigration to Continental United States.

Political.—The government of the Islands rests with Congress which has temporarily delegated full power to the President, and is based on an Act of Congress approved March 3, 1917. The Governor is appointed by the President. Local legislation is in the hands of two municipal bodies known as the Colonial Councils, one for St. Thomas and St. John, and one for St. Croix, and constituted by 15 and 18 members respectively. Four of the members of the St. Johns-St. Thomas Council and five of the St. Croix Council are appointed by the Governor. These councils have the same functions as city councils in the United States, together with some of the functions of county and state governments.

The Colonial Councils enacted legislation making March 31 of each year, the day on which the United States took over the Islands from Denmark, a legal holiday, to be known as Transfer Day. On February 25, 1927, the President approved an Act authorizing the construction of public highways, but as yet no funds have been appropriated.

Health.—The health activities are conducted under the supervision of medical officers of the U. S. Navy. Three municipal hospitals are maintained, one at St. Thomas and one each at Frederiksted and Christiansted. There is also an insane asylum and a leper colony. Health conditions continue to improve. The death-rate per thousand inhabitants for 1926 attained the new low record of 19.1 as compared with 19.2 for the preceding year and 23.1 in 1924 and 35.4 per thousand population between 1911 and 1917. During the year 916 patients were admitted for treatment in the Municipal Hospital at St. Thomas, 869 in Christiansted, and 812 in Frederiksted. There are 85 inmates in the Leper Asylum. Infant Mortality records are as follows: (per thousand born alive), 1911-1917, 320; 1924, 178.2; 1925, 140.4; 1926, 120.9.

Finance.—On July 1, 1927, a Department of Finance was instituted in the Municipality of St. Thomas and St. John to centralize the collection of revenues and all purchasing, disbursing and accounting. It is planned

to inaugurate this system in St. Croix on January 1, 1928. During the 69th Congress, the export duty on sugar was reduced from eight dollars to six dollars per ton. This reduction would cause a loss of revenue of approximately twenty thousand dollars annually considering a normal sugar crop. Fiscal year revenues from all local sources amounted to \$274,026.24, an increase of \$25,746.77 over the previous year. The total expenditure for government and public improvements was \$594,333.84, a decrease of nearly \$70,000 from 1925-1926.

Commerce.—A total of 429 ocean-going vessels, totalling 1,711,163 tons, entered the harbor of St. Thomas during the year 1926-1927. This is considered a normal year for ships calling at this port. St. Thomas being the only port of the Islands, small craft (vessels less than 100 tons) take care of the traffic between the other islands and St. Thomas.

As in former years the tourist traffic reached a peak in the early part of the calendar year. The Chamber of Commerce and Harbor Board of St. Thomas are now advertising the Virgin Islands in the hope of attracting more visitors and that they will see the advantages for the investment of capital and the stimulation of industry.

Agriculture.—The Department of Agriculture, Commerce and Labor is continuing its Agricultural Survey under the Experiment Station in St. Croix with its extension in St. Thomas. This survey, initiated during the previous year, is proving to be of great benefit in stimulating interest among the farmers and encouraging them to greater efforts. The sugar cane crop shows a slight increase over that of former years. The sugar industry is the principal means of livelihood on the island of St. Croix; however, since the opening of the Porto Rican market to the people of the Virgin Islands, the raising of cattle has made marked strides.

Public Works.—The supply of fresh water during the dry season has for years been an unsolved problem. Work during the year has completed about half of the proposed plan to construct five reservoir units with

a total capacity of 3,200,000 gallons. Funds are not available for the further continuance of this work. On the Island of St. Croix a dam has been completed at Crique and the impounding basin practically filled. A cast-iron pipe-line connects this basin with a newly constructed 10,000 gallon reservoir in Frederiksted. A 20,000 gallon reservoir in Christiansted has been constructed, which is supplied by wells. This forms the new fresh-water supply to the city.

Education.—The enrollment in the public schools, 3,083 for 1927, was about the same as that of the previous year. There were 112 teachers, one less than in 1926.

GUAM

General Conditions.—The natives of Guam were of Malay origin. They are called Chamorros. None of the pure stock now survives; but the physical characteristics, cultural traits and language of the Chamorros persist. American citizenship has not yet been granted the people of Guam. On June 30, 1927, the population of Guam was 17,018, of whom 664 were non-natives and 410 were personnel and families of the Naval Establishment. Captain L. S. Shapeley, U. S. N. (retired) continued as Governor during 1927.

Agriculture.—Agriculture continues to be the chief occupation of the natives, nearly every family owning and cultivating a small plot. During the year crop production showed a great increase over those of former years because of prevailing favorable climatic conditions, together with the combined efforts of the Extension Agent and Commissioners of the various districts to have the farmers raise more of the food crops, so as to make the island as nearly self-sustaining as possible. Maize, the principal cereal crop grown in all parts of Guam under cultivation, heads the list of the crops. Next in importance come the different varieties of root crops which include taro, yams, sweet potatoes, cassava and arrowroot.

Experimental cultivation of rice, heretofore neglected, due to previous successive failures, were made by a number of farmers during the year

and it is hoped that the resulting fair yield will stimulate interest of rice growers in this industry. Rice heads the list of imported foodstuffs. Copra, the chief money crop of the island and the only article of export, has shown a marked improvement both in quantity and quality. During the fiscal year 1926-1927 a total of 2,115,120 lbs. of copra and 72,933 lbs. of cocoanut oil were exported. A coffee planting campaign, started to encourage the natives in this production, is already showing results and it is hoped that in a few years the importation of a cheap grade will be supplanted by the locally grown product. The Guam Agricultural Experiment Station under the U. S. Department of Agriculture continues its work for the improvement of stock and betterment of food and forage crops. The work and benefit of the Experiment Station is being carried to the natives by Extension Agents employed by the Government for that purpose. These agents have been instrumental in assisting the Station to locate and cope with disease among stock and cultivation.

Public Works.—The great need of the island is a good road connecting the southern and richest agricultural section with the northern and most populated. Contracts were let during the past year for the extension of about three miles of the road which will connect these districts. This work which has now been completed leaves but eight miles of this road to be built. The water supply is also a problem which the government is attempting to meet. Two small concrete dams have been constructed on the Santa Rosa mountain and the water piped by gravity a distance of one and a half miles. Outlets along the pipe-line serve the districts traversed. A well is being sunk in the Price Road district in order to provide water for residents of that locality. Farmers are still urged to build small cisterns but the comparatively high cost has prevented many from following this plan. Two small frame school buildings with teacher's quarters at one end have been built, one at Sinajana and one on the Price Road, and the school at Umatac has

been extended by half its previous area.

Education.—Every possible effort has been made for some time to place the native teachers in responsible places. All principals of schools are now natives. In the Department there are 94 native teachers and 13 Americans (all wives or daughters of Naval Personnel). The morale among the teachers is excellent and efforts are being made to increase the standard, both by interesting more young people in the profession and by endeavoring to hold the desirable young people. During the past year for the first time an attempt was made to measure the progress of the students. During July, 1926, the Stanford Achievement Test, Form A, was given to all the children in the public and private schools, from the 2-A Grade up. It was found that the children were very backward in Comprehension of Reading and in Language, History and Nature; but very far advanced in Arithmetic and Spelling. In all schools only the English language may be used. A total of 3,272 pupils are enrolled in the Public and Private schools.

Health.—The Department of Health embraces the entire medical personnel of the Island. In addition to the Naval Hospital and the Susana Hospital, there are maintained a Tuberculosis Hospital, an isolation hospital at Tumon for lepers, and seven native clinics in various parts of the island. At the end of the fiscal year 1927 there were 7 cases of tuberculosis and 5 lepers. The health of the population has been excellent throughout the year. There were 795 births and 267 deaths during that period. The death rate per one thousand population was 16.3 in 1927, as compared with 24.4 the previous year.

Finance.—The total government revenue for the fiscal year 1927 was \$159,126.73, while the expenditures during that period amounted to \$123,482.47. Over 30 per cent of the total expenditures is credited to the Department of Education and almost 25 per cent to the Department of Industries, showing the effort being put forth by the government to raise the standard of living. The Bank of

Guam established in 1915 by Executive General Order and authorized to conduct the business of Commercial Banking as a Division of the Treasury of the Naval Government of Guam, is owned by the Government. During the year the bank financed shipments of merchandise imported by Guam merchants to the value of \$345,742.51. Interest and dividends at the rate of 7.19 per cent was paid to Class B depositors. All public fiscal matters of the Island are checked through a careful and thorough audit system.

AMERICAN SAMOA

General.—The general situation in this isolated group of islands has been very satisfactory throughout the year. Captain H. F. Bryan, U.S.N. (retired), continued as Governor until 7 September, 1927, when he was relieved by Captain S. V. Graham, U. S. Navy. The Governor is also the Commandant of the Naval Station.

The Annual Fono (General Meeting of the Delegates of the three Districts comprising American Samoa) was held November 1 and 2, 1926. The delegates consisted of the District Governors, County Chiefs, District Judges, and ten delegates from each district. Among other things the Fono decided to have the government handle the copra for the next year and to send a delegate to the Conference on Education, Reclamation, Rehabilitation and Recreation to be held in Honolulu in April, 1927.

Copra is the principal means of livelihood and the source of income for the people of the island. It has been found that a much better price is obtained for the copra when the government handles the sale than when it is sold by the districts. The hurricane of January, 1926, did so great damage that the copra crop is not yet back to normalcy. It is, however, expected that the export will in the early part of 1928 again be large. A total of 598 tons of copra was produced and exported in 1926, as compared with 1,314 tons in 1925.

The fiscal year is the calendar year. The total estimated expenditures for the year 1927 was \$106,382.43, which was in excess of the

expected revenue (\$95,310.00) by \$11,072.43. There remained on hand on the first of the year an unused balance which, in view of the projected work, fully warranted this additional expenditure. For the first half of 1927 the expenditures amounted to \$58,503.16.

Education.—There are nineteen schools in the public school system of Samoa. The teaching staff consists of forty-six, six of whom are white and forty Samoan. There is an enrollment of 1,868.

The Department of Health is administered under the direction of med-

ical officers and nurses of the navy. Medical attention is given the people of the islands through dispensaries maintained in the various districts and at the Samoan Hospital on the Island of Tutuila.

Population and Food.—During the year 1926-27 there were 269 births, 215 deaths and 74 marriages. The population of American Samoa was 8,730 on 30 June, 1927.

A large quantity of food is imported to supplement that which is raised on the islands. In addition to the usual tropical foods, the breadfruit and taro are plentiful.

MARITIME JURISDICTION

BY CHARLES E. HILL

PROFESSOR, GEORGE WASHINGTON UNIVERSITY

Liquor Treaties.—The liquor and smuggling treaty with France, negotiated in 1924, became effective March 12, 1927. This treaty permits the authorities of the United States to visit and search French merchant vessels within one hour's run from the American shore. No new treaties of this nature have been negotiated during the year. On the other hand, the Government of the United States denounced the treaty with Mexico, so that it ceased to function after March 22, 1927. The reason was that under the treaty the United States had become obligated to prevent the smuggling of arms to insurgents in Mexico. The United States still maintains the embargo on arms, but the Government desires to be free to lift it whenever expediency dictates.

The Canadian Frontier.—During the first half of the year a royal commission of the Canadian Government conducted hearings on the enforcement of the customs laws along the boundary. As a result Vancouver was closed to the exportation of liquor to the United States. The liquor traffic of that port moved to Papeete, the Society Islands. Halifax was also closed as a port in transit for liquor going to the United States. The trade moved to the French colonies in the Gulf of St.

Lawrence, St. Pierre and Miquelon, and to Newfoundland. A favorite device for violating the law is to have an American vessel licensed in the coastwise trade go out and meet the foreign vessel at sea, there tranship the liquor and let the American vessel return to port. There are virtually no customs requirements for coastwise vessels, which makes it easy to escape detection.

Court Cases.—During the year many cases affecting the twelve-mile limit and the hours run from shore have been adjudicated. The two most noteworthy are the "Quadra" and the "Underwriter" in the Supreme Court. The former was a British vessel hovering off Farallon Islands, twenty-five miles west of San Francisco. She had taken on her cargo of liquor at Vancouver. The coastguard towed in the ship, the officers, the crew, and the cargo to San Francisco under the treaty with Great Britain. The ship was seized within one hour's run from shore as determined by the speed of the motor boat at her side. The treaty does not state expressly that those on board such a vessel may be held; but it does state that the ship's papers may be examined "for the purpose of ascertaining whether the vessel or those on board are endeavoring to import or to have imported al-

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coholic beverages into the United States." The court thought that this clause was sufficient to hold the persons on board. The question was raised whether these persons could be prosecuted under the treaty for conspiracy to effect importation. The court held that the treaty covered such conspiracy. The last question raised was whether persons without the United States, conspiring to violate its laws with other persons within the United States, could be prosecuted when they are later apprehended within the United States. The court found that the conspiracy was continuous and that four overt acts had been committed in pursuance thereof. Under such circumstances all of the persons involved in the conspiracy were guilty.

The "Underwriter" was an American coastwise vessel that proceeded on a foreign voyage and took on a cargo of liquor without giving up her enrollment and license and without being registered. She was seized by the coastguard thirty-four miles from shore. The claimant, Maul, agreed to the facts, but objected to the jurisdiction of the district court on the ground that the coastguard had no authority to seize the vessel more than twelve miles from the shore. Inasmuch as the vessel was violating the navigation laws the court held the seizure lawful.

Convention on Territorial Waters.—Dr. Walther Schücking of the committee of experts for the progressive

codification of international law submitted to the Council of the League a draft of the law on territorial waters, April 20, 1927. The zone shall extend six marine miles from the low watermark. The adjoining state shall have unlimited right of dominion over this zone with allowance for the rights of the common user. All vessels without distinction shall have the right of pacific passage; submarines are obliged to pass on the surface. An international waters office is to be established for hearing and determining claims to variations. Appeals will lie to the Permanent Court of International Justice. There are fourteen articles to the draft convention.

Radio Conference.—A Radio Conference with representatives from fifty-seven governments met in Washington during November, 1927. A convention and supplementary regulations were drafted and signed regulating the transmission by radio of messages between nations, which includes transmission between ships at sea of different nationalities as well as airplanes. Priority is given to distress signals. Charges are regulated, so are wave lengths and the certification of operators. The International Bureau of the Telegraph Union is made the clearing house for information. The attitude of the United States Senate will be watched with interest inasmuch as the convention contains a provision for compulsory arbitration.

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By ROY MALCOLM

PROFESSOR, UNIVERSITY OF SOUTHERN CALIFORNIA

PANAMA

Canal Treaty.—In the closing weeks of December, 1926, there was placed before the National Assembly of Panama a draft of the treaty between the United States and Panama which had been signed by the two countries in the preceding July. Article XI of the proposed treaty, which called forth comment here and abroad, provided: "The Republic of Panama

agrees to cooperate in all ways with the United States in the protection and defense of the Panama Canal. Consequently, the Republic of Panama will consider itself in a state of war in case of any war in which the United States should be a belligerent, and in order to render more effective the defense of the Canal, will, if necessary in the opinion of the United States Government, turn over to the

United States in all the territory of the Republic of Panama, during the period of actual or threatened hostilities, the control and operation of wireless and radio communication, aircraft, aviation centres and aerial navigation.

"The civil and military authorities of the Republic of Panama shall impose and enforce all ordinances and decrees required for the maintenance of public order and for the safety and defense of the territory of the Republic of Panama during such actual order or threatened hostilities, and the United States shall have the direction and control of all military operations in any part of the territory of the Republic of Panama.

"For the purpose of the efficient protection of the Canal, the Republic of Panama agrees that in time of peace the armed forces of the United States shall have free transit throughout the Republic for manoeuvres or other military purposes, provided, however, that due notice will be given to the Government of the Republic of Panama every time armed troops should enter its territory. It is understood that this provision for notification does not apply to military or naval aircraft of the United States."

Criticism of Treaty.—The agreement on the part of Panama to follow the United States into war was reported to have called forth criticisms from the officials of the League of Nations at Geneva as conflicting with certain provisions of the Covenant of the League, particularly Articles XI, XVI, and XX.

During January marked opposition developed in Panama to the ratification of this treaty. On January 26 the Panama National Assembly passed a resolution suspending further consideration of the document and requested President Chiari to reopen negotiations looking to a more satisfactory solution of the nation's aspirations.

Morales Incident.—In September the newspapers of the United States carried an interesting dispatch to the effect that there had been a discussion of the status of the Panama Canal Zone at a session of the Assembly of the League of Nations on

September 10 by Dr. Eusebio Morales, Panama delegate and Foreign Minister of Panama. It was reported that Dr. Morales took the stand that the real sovereignty over the Canal Zone vested in the Government of Panama, regardless of the fact that certain rights had been given to the United States in the Zone. He further argued that the League should intervene if the United States continued to insist upon its sovereign rights. He also suggested that the United States as a just nation would eventually accept Panama's view of the question.

Kellogg Statement.—Two days later a statement was issued by Secretary Kellogg of the American State Department to the effect that "there never has been any dispute between the United States and Panama as to the sovereignty of the Canal Zone, and further that the League of Nations has nothing whatever to do with American control over the Canal Zone, either now or in the future."

NICARAGUA

Disturbing Events.—The year witnessed a number of events in Nicaragua which, to say the least, seem to be disturbing elements in the peace of the Caribbean. It may be recalled that the United States was severely criticised in some quarters for extending recognition in 1926 to the Diaz government and, in general, assuming a friendly attitude.

President's Attitude.—On January 10 President Coolidge sent a formal message to Congress defending his policy in Nicaragua. "I have," said the President, "the most conclusive evidence that arms and munitions in large quantities have been on several occasions since August, 1926, shipped to the revolutionists in Nicaragua. Boats carrying these munitions have been fitted out in Mexican ports and some of the munitions bear evidence of having belonged to the Mexican Government." The President further pointed out that it appeared that Mexican officials had encouraged these expeditions. "The United States," continued the President, "cannot, therefore, fail to view with deep concern any serious threat to stability

and constitutional government in Nicaragua tending toward anarchy and jeopardizing American interests especially if such state of affairs is contributed to or brought about by outside influence or by any foreign power."

Stimson Mission.—In April President Coolidge dispatched to Nicaragua, as his personal representative and peace emissary, Henry L. Stimson, former Secretary of War. On his arrival at Corinto in April, Mr. Stimson proceeded to confer with representatives of both the Diaz government and the Liberal government. In the meantime some hostile criticism of American policy in Nicaragua appeared in the American press, as well as in Central and South America. This criticism was, no doubt, a factor in the decision of the President to set forth the position of the United States.

Executive Attitude.—In an address delivered before the United Press in New York on April 25 the President said: "Our relationship to Nicaragua I have set out in detail in a message to the Congress. For a dozen years we kept a force of marines in that country at the earnest solicitation of its government. During this time the people were peaceful, orderly and prosperous and their national debt was greatly reduced. Almost at once after I withdrew the marines revolution was started. Finally a president was designated by the Congress which appeared to us and to other Central American countries to have a constitutional title, and we therefore recognized him. As the disorders continued, on his representation that he was unable to protect American lives and property, I sent a force of marines for that purpose. . . .

"We are not making war on Nicaragua any more than a policeman on the street is making war on passers-by. We are there to protect our citizens and their property from being destroyed by war and to lend every encouragement we can to the restoration of peace. While the destruction of life and property has been serious enough, had it not been for the presence of our forces it

would undoubtedly have been much worse.

"Toward the Governments of countries which we have recognized this side of the Panama Canal we feel a moral responsibility that does not attach to other nations. . . . We have undertaken to discourage revolutions within that area and to encourage settlement of political differences by the peaceful method of elections. This policy is bound to meet with some discouragements, but it is our hope and belief that it will ultimately prevail."

Stimson Plans.—On May 6 the State Department announced the plans that had been worked out by Henry L. Stimson for bringing about peace in Nicaragua. The plans provided for: (1) complete disarmament on both sides; (2) an immediate general peace to permit planting for the new crop in June; (3) a general amnesty to all persons in rebellion or exile; (4) the return of all occupied or confiscated property to its owners; (5) participation in the Diaz Cabinet by representative Liberals; (6) organization of a Nicaraguan constabulary on a non-partisan basis, commanded by American officers; (7) American supervision of the 1928 election; (8) the continuance temporarily in the country of a sufficient force of American marines to guarantee order pending the organization of the constabulary.

New Difficulties.—It was reported in the United States that considerable progress had been made during June in carrying out this peace program of Mr. Stimson. But in July trouble again developed between the American naval forces and certain rebel forces under the leadership of General Sandino. It appeared that the latter were unwilling to accept the Stimson terms of peace. This latest conflict called forth more unfavorable criticism of our Nicaraguan policy. The Fifth Pan-American Labor Congress on July 21 by a rising vote approved a resolution "that the people of Nicaragua have been the unfortunate victims of a foreign intervention which has caused not only internal suffering but internal difficul-

ties." The Congress also petitioned the United States Government to effect an "immediate withdrawal of United States forces on land, sea and air from Nicaragua."

HAITI

Cumberland Report.—An interesting side-light upon our position in Haiti is to be found in the annual report of the American Financial Advisor-General Receiver of Haiti, W. W. Cumberland, published by the State Department early in 1927. The report covers the fiscal year October, 1925-September, 1926. It contains the following introductory statement: "No fiscal year since the conclusion of the treaty has been so generally satisfactory as 1925-1926. Unmistakable progress was made in commercial and financial development but of more importance was the equally pronounced progress in social amelioration. There is a strong probability that in 1925-1926 a peak was reached in Haitian financial administration which will not again be equalled for several years. All contributing factors were favorable toward making the fiscal year 1925-1926 an unqualified success from the financial view, but prospects for immediately following years are not correspondingly brilliant."

King Episode.—The refusal of the Haitian government to allow United States Senator W. H. King to enter Haitian territory in the middle of March led to an interesting controversy. The Government gave as the basis of its action the following: "That Senator King had publicly uttered in the United States a false and offensive declaration against the President of Haiti and his coadjutors and had made himself in the United States the agent of the worst element of disorder in Haitian politics. For these reasons it was claimed that Senator King's presence in Haiti would provoke a political agitation." It was further pointed out that the consequence of this "would be disastrous to the population, which is now accustomed to peace and labor." The United States Government, through the resident American High Commissioner, attempted to persuade the Haitian government to permit Sena-

tor King to enter the country, but without success.

CUBA

President Machado's American Visit.—An interesting episode in the history of American-Cuban relations was the visit in April last of President Gerardo Machado of Cuba. In an early interview he declared that "the eventual modification of the Platt amendment embodied in the permanent treaty between the United States and Cuba would be beneficial to both countries." The main provisions in this amendment are: (1) No treaty was to be made which would impair the island's independence, nor was any portion of the island to be allowed to pass under the control of a foreign power. (2) No debt should be contracted or assumed beyond the ability of the island to pay. (3) The United States was to have the right to intervene to protect Cuban independence, to maintain a government which would protect life, liberty, and property and carry out the obligations undertaken by the United States in its treaty with Spain.

Purpose of Visit.—In another statement President Machado indicated that the object of his visit was to bring the warm greetings of his government to the American people upon the twenty-fifth anniversary of the establishment of the Republic of Cuba. He also stated that he was "cooperating in order to give the greatest importance to the forthcoming Pan-American Conference, which will be held in January, 1928, in the city of Havana, and he keenly desired that, if it be possible, both the President and the Secretary of State Kellogg, in a spirit of Pan-American good-will, will visit the neighboring Republic of Cuba during the holding of the Congress."

COMING PAN-AMERICAN CONGRESS

In November it was reported from Washington that President Coolidge planned to attend the Sixth Pan-American Congress, which was to convene in Havana on January 16, 1928, and to deliver the opening address.

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His main purpose would be, it was reported, to reassure the Latin-American nations of our desire to be helpful in all our Central American and Latin-American relations. The personnel of the American delegation to the Congress was announced as follows: Former Secretary of State Charles E. Hughes, Chairman; Henry P. Fletcher, United States Ambassador to Italy; former United States Senator Oscar W. Underwood of Alabama; Dwight W. Morrow, United States Ambassador to Mexico; Judge J. O'Brien of New York; James Brown Scott of Washington, D. C., trustee and Secretary of the Carnegie Endowment for International Peace; Ray Lyman Wilbur, President of Leland Stanford Jr. University, and Dr. Leo S. Rowe, Director General of the Pan-American Union.

PART THREE

GOVERNMENTAL FUNCTIONS

DIVISION VII

PUBLIC RESOURCES AND UTILITIES

FEDERAL SURVEYS AND MAPS

BY GEORGE OTIS SMITH

DIRECTOR, UNITED STATES GEOLOGICAL SURVEY

AGENCIES

There are more than a dozen agencies of the United States Government whose functions include surveying and map making, besides a number of others that carry on mapping activities incidentally.

The United States Coast and Geodetic Survey, the United States Geological Survey, and the General Land Office are three bureaus whose surveying and mapping is basic in character. The other mapping bureaus, offices and services utilize the results of the primary work of these three bureaus wherever possible. In areas where this basic information is not available they may have to perform such work themselves.

Board of Surveys and Maps.—

The organization within the last few years of the Federal Board of Surveys and Maps has effectively coordinated the various surveying, map-making and map-using offices of the Government. The members of this Board include the following 22 Government services: Corps of Engineers, War Department; U. S. Coast and Geodetic Survey, Department of Commerce; U. S. Geological Survey, Department of the Interior; General Land Office, Department of the Interior; Division of Topography, Post Office Department; Bureau of Chem-

istry and Soils, Department of Agriculture; Bureau of Reclamation, Department of the Interior; Bureau of Public Roads, Department of Agriculture; Office of Indian Affairs, Department of the Interior; Mississippi River Commission, War Department; U. S. Lake Survey, War Department; International (Canada) Boundary Commission, State Department; Forest Service, Department of Agriculture; U. S. Hydrographic Office, Navy Department; Military Intelligence Division, General Staff, War Department; Federal Power Commission, Air Corps, War Department; Bureau of Aeronautics, Navy Department; Aeronautics Branch, Department of Commerce; Bureau of Foreign and Domestic Commerce, Department of Commerce; Geographic Section, State Department; Division of Maps, Library of Congress.

The Coast and Geodetic Survey makes charts covering the coasts of the United States and all its possessions. This work comprises every detail from the first surveys to the completed product and necessitates the constant revision and alteration of some 700 charts. The Coast Survey also carries on first-order geodetic work and determines control elevations above sea level throughout the United States. In all this work

faster progress is believed to be necessary to meet the needs of the country. The Director in his annual report for 1927 calls attention to the fact that the greater portion of the United States has now reached the stage in its industrial development where it has become economically wasteful to delay further the completion of these fundamental surveys. He points out that every country of Europe that is thickly settled has been covered by accurate systems of triangulation and leveling for the use of its engineering and commercial activities.

Mapping Airways.—One of the newer activities of the Coast and Geodetic Survey is the mapping of airways, and it is striving to produce accurate maps of this sort without going into the field to make special surveys for that purpose. The information, says the Director in his report, is derived from various sources including post route maps, Government highway maps, Geological Survey Maps, and many others, and he points out that of these sources the Geological Survey alone publishes basic maps, for general purposes, on which all items shown are properly coordinated. Each of the other maps, he says, is made for a special purpose, to which items of general interest are subordinated, and none attempts to coordinate its own particular major items with those of the other agencies. "The Topographic map," he continues, "is essential to the study of flood control, irrigation, soils, forestation, and development problems on a large scale. It is of great material assistance to road-building, water-power projects, and other engineering problems of national importance. The total cost of the completion of the topographic map of the United States (by the Geological Survey) and the necessary antecedent control surveys (by the Coast and Geodetic Survey) could be charged with economy to any of the projects mentioned."

Survey Progress.—The Coast and Geodetic Survey is one of the oldest of the Government bureaus and has just closed its 111th year of active operation. This year has been marked by the fact that the demand for its

charts and nautical publications has far exceeded that of any previous year. The bureau has made great strides in its surveys, especially on the Pacific Coast, owing largely to the advances made possible by having modern surveying vessels equipped with modern instruments and machinery.

SERVICES

The General Land Office, also one of the oldest bureaus of the Government, makes surveys of the public lands, including necessary resurveys. The bureau issues annually a wall map of the United States measuring 5 by 7 feet, showing the extent of the public surveys, the national parks, national monuments, national forests, and Indian, military, bird, and game reserves, besides the usual information found on a good map. It also issues large maps of the 29 public-land States, Alaska, and Hawaii. All these maps, together with a small map of the United States showing the routes of the principal explorers and a historical sketch of the Louisiana Purchase, may be purchased from the Superintendent of Documents, Washington, D. C. Township plats of surveys may be obtained direct from the General Land Office. During the year the field force of the General Land Office made original surveys and resurveys of over 5,000,000 acres and revised its maps of the United States, New Mexico and Michigan, and it now has in course of preparation a new map of California.

The Geological Survey is the most productive of the mapping organizations of the Federal Government. It publishes maps in the greatest volume and the greatest variety, although its activities are by no means confined to surveying and map-making. In many of its activities the resulting maps appear to be and in fact are incidental. Certain geologic work or studies of water resources, for example, may bring forth maps of large areas investigated, but the maps will probably accompany and illustrate voluminous scientific or engineering reports. Even in purely engineering mapping, however, the Geological Sur-

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vey may be said to be the foremost governmental agency. As the Coast and Geodetic Survey is responsible for the mapping of the bottom of the ocean along all the coasts of the country, so the Geological Survey is engaged in making the basic topographic map of the entire land area of the United States.

SURVEYS

Last year over 11,000,000 acres was topographically surveyed, in cooperation with 26 States. Nine States and the District of Columbia are now entirely mapped and the percentages of the other States range from 8 to 88 per cent. Nearly 43 per cent of the country as a whole, exclusive of Alaska, has thus been mapped. The result of all this work is seen on over 3500 topographic maps of uniform size which are sold direct by the Geological Survey. Great areas are also covered by geologic surveys and maps, ranging from general reconnaissance maps to highly detailed geologic maps of mining districts and oil fields. Another type of detailed maps comprises the geologic maps superimposed on topographic bases, of which several hundred have been issued in connection with geologic folios during the 48 years of the existence of the Geological Survey. Geologic maps of 5 States have also recently been issued. Alaska is included in the general geologic and

topographic mapping program of the Geological Survey.

COAL SURVEYS

Coal Fields.—In his annual report for the year the Director of the Geological Survey cites, among others, an example of productive investment in the intensive study of the coal fields of the West continued during the last 20 years. In that period approximately a million dollars of the public funds, appropriated for geologic surveys, has been expended in the study and mapping of areas where the country itself is the owner of many million acres of coal lands. This inventory of the coal in public ownership has not only contributed to the popular realization of the extent of this large estate of the people but has also helped materially in bringing about the enactment of laws better fitted to its administration in the public interest. In the seven years since the passage of the mineral leasing law nearly 10,000,000 tons of coal has been mined from these lands, with a return to the Government in royalty of approximately \$1,250,000. Last year alone the royalties and rents amounted to nearly \$300,000—a very fair annual return on the investment of a million dollars in determining the extent and value of the estate—and of course mining on these public coal lands has only begun.

STATE GEOLOGICAL SURVEYS

By M. M. LEIGHTON

CHIEF, ILLINOIS GEOLOGICAL SURVEY, AND SECRETARY, ASSOCIATION OF AMERICAN STATE GEOLOGISTS

STATE APPROPRIATIONS

Money Grants Increase.—Because of their mineral wealth and the aid which modern geology is able to render in an intelligent exploration, recovery and conservation of this wealth, most states maintain geological surveys. During 1927 approximately \$1,350,000 was appropriated for their service, and this was further increased by perhaps \$250,000 by cooperating Federal agencies,

counties, and local organizations. This total is considerably greater than that for 1926. Notable increases in appropriations were made by Alabama, Arizona, Arkansas, Connecticut, Florida, Idaho, Illinois, Indiana, Kansas, Michigan, Nebraska, New Jersey, New Mexico, Oklahoma, Pennsylvania, and Virginia, West Virginia, and Wyoming. A few states were embarrassed by diminished appropriations or temporary denials.

All who possessed funds have apparently given a good accounting and in most respects are serving the needs of the present complex civilization for geological information and authoritative base maps. About 161 full-time technically trained men and 233 part-time participated in this scientific effort.

FUNDAMENTAL STUDIES

Although most large mineral industries now employ their own geologists or mining engineers for local detailed work, they need basic information on stratigraphy, paleontology, structural geology, physiography, glacial geology, and historical geology.

Arizona published a report on the geology and ore deposits of the Courtland region and is preparing to publish, early in 1928, the results of stratigraphic and paleontologic investigations made during the last summer. It is also hoped to publish, sometime this year, a very elaborate and detailed report on the geology and mineral resources of the Jerome Quadrangle.

Arkansas is preparing for publication the results of a stratigraphic study of the upper Cretaceous rocks of southwestern Arkansas. This work was done in cooperation with the U. S. Geological Survey. A geological map of the state is in the course of preparation on the scale of 1:500,000 and will be forthcoming early in 1928.

Colorado, like some of the other states, was handicapped by a lack of funds, but did considerable work on the revision of geologic maps which were issued in 1913.

Connecticut made a good start on the glacial geology of the state and published a guide to the geology of Middletown, Connecticut and vicinity.

Georgia.—Most of the work done in Georgia during 1927 was devoted to areal and structural geology which will culminate in reports.

Idaho.—A study of the drainage changes in northern Idaho and a study of the Palouse country constituted Idaho's physiographic studies, the former resulting in a published pamphlet. Idaho also issued a pamphlet covering a geologic reconnaissance of about seven counties.

Illinois continued its systematic study of the stratigraphy and paleontology of the Silurian, Pennsylvanian, and Pleistocene systems and the detailed study and mapping of the Roodhouse, Havana, Coulterville, Beardstown, Monmouth, and Elgin quadrangles. Illinois published *Bulletin 49*, "Geology and Mineral Resources of the Dixon Quadrangle," a new list of publications, a revision of the mineral industries map and directory, and Educational Series No. 1 on the story of the geologic making of southern Illinois.

Iowa went ahead with studies of the Cretaceous, Devonian, Maquoketa, Decorah beds, and the Iowan drift and older Pleistocene deposits. Two reports, one on the geology of Lucas County and the other on the geology of Crawford county were issued.

In Other States.—Kentucky completed the geology of thirty counties and published geologic reports on the Middlesboro basin and Edmonson County. Maryland is rapidly winding up the geologic mapping of the state and has published several county geologic maps. Michigan carried on stratigraphic studies of the Ordovician rocks of the northern Peninsula in cooperation with the National Museum and the State University. The stratigraphy and paleontology of the Paleozoic rocks of the southern part of Minnesota and the stratigraphy of the northern part of the state were studied by the Minnesota Survey. Missouri worked out the geology of its clay resources and the stratigraphy of the Potosi and Erminse areas. Nebraska has under way five special reports on the fauna of the Pennsylvania system, the collecting and laboratory work having been completed. The manuscript for the *Fusulina* bulletin is ready for the press, and a stratigraphic survey of Nebraska and of the Cretaceous formation is partly completed.

New York carried on stratigraphic field studies in 15 quadrangles and has in press a bulletin on the geology and origin of the Silurian salt of New York State. Two geologic reports were published by Ohio, one on Delaware County and the other on Vin-

ton County. Stratigraphic studies in Oklahoma embraced the Arbuckle limestone, the Simpson formation, Woodford, Sycamore, and Caney formations of the Arbuckle Mountains, in addition to the stratigraphy of the Ouachita Mountains. A geologic map of the state was published in cooperation with the U. S. Geological Survey and eight bulletins were issued dealing with the geology of certain areas.

The Pennsylvania Survey completed the preparation of a handbook on the rocks of Pennsylvania and a detailed study of the stratigraphy of the oil sands of northwestern Pennsylvania. Studies were continued on the extra-morainal glacial deposits and the manuscript map for a new state geologic map completed. South Dakota has started a geologic map of the state, but further work has been delayed as no funds are available for the present year. The geology of Hardin County and the Chattanooga shale in northeastern Tennessee claimed the attention of the Tennessee Survey.

The mapping of Texas by counties, quadrangles, and other areal units has been continued along with paleontological investigations by formations and by groups of fossils. The geology of Cooke County and Stockton quadrangle has been put in bulletin form together with bulletins on exploratory geology of a part of southwestern trans-Pecos Texas and the cretaceous of the Rio Grande valley and northern Mexico. The Virginia Survey completed work on the Cambrian and continued work on the general geology of the Piedmont. The mapping of the cretaceous precambrian contact from Richmond to the North Carolina line was completed. Detailed geologic work progressed in several counties and quadrangles. Four bulletins were issued, one being on the geology of the Virginia Triassic. The Washington Geological Survey confined its stratigraphic, paleontologic, and detailed studies to a portion of Stevens County. West Virginia completed field work for detailed reports of several counties. Wisconsin continued the mapping of the Pleistocene of the

northeastern part of the state and the Cambrian.

STUDIES IN MINERALS

Oil and Gas.—Arkansas completed a survey of the oil and gas possibilities in the Coastal Plain area of the southern and eastern parts of the state and a survey of the gas possibilities of the Arkansas River valley. Idaho studied the oil and gas possibilities of southwestern Idaho. Illinois published press bulletins on the oil possibilities of the Payson Anticline, Adams County, of the Alexis and Galesburg quadrangles, a summary of the petroleum industry in Illinois during 1926, a summary of oil field operations during the first quarter of 1927, a summary of the structure of the Centralia and Sandoval oil fields, recent developments in the vicinity of Jacksonville, and deeper production in the Allendale field. It is studying the occurrence of oil and gas in Crawford and western Lawrence counties, collecting subsurface data in southwestern Illinois, and preparing a report on the oil and gas possibilities of Jersey and Green counties. In cooperation with the State Water Survey, 273 water analyses have been made preparatory to a geo-chemical report on the oil field waters of Illinois. It has also made a study of oil field muds and collected data on the Siggins pool in Cumberland County with reference to the feasibility of mining, and started an investigation of the effects of different types of oil field waters on the setting of neat cement.

Indiana made a survey of three oil fields and published two petroleum reports. Field work was completed and a bulletin published on the oil and gas resources of Anderson County, Kansas. Michigan carried on special investigations in the Saginaw oil field. New York is preparing a report on the oil and gas fields in western New York. Oklahoma is issuing a bulletin on the oil and gas in Oklahoma which appears as separate chapters written by a number of professional geologists. Pennsylvania completed a general reconnaissance of its oil and gas fields and made a detailed plane table map

and study of secondary recovery in the Bradford oil field. It is also making a laboratory study of samples from deep well drilling cuttings. South Dakota compiled and published a map of oil structures. A bulletin on the oil and gas possibilities at Early Grove, Scott County, has been issued by the Virginia Survey.

Coal.—During the past year Alabama published a bulletin on the analyses of the coals of that state. Idaho studied the coal deposits in the southeastern part of the state. Illinois continued work on its comprehensive coal bulletin of the state, prepared a second report on coal stripping, revised its educational bulletin on the Illinois coal field, and published a Report of Investigations on the present status of Illinois coal. It studied the coal stripping possibilities of parts of Wabash, Edwards, Saline, Gallatin, and Williamson counties, Illinois.

In cooperation with the U. S. Bureau of Mines, Indiana published analyses of its coals. Three of the eight bulletins issued by the Iowa Survey were on the subject of its coals and their uses. The geology of the eastern Kentucky coal field has been worked out. Ohio assembled coal analyses and sections looking forward to their publication in bulletin form. The coal of Craig County has been given careful study by the Oklahoma Survey. Pennsylvania cooperated in coal classification and completed studies and a report on the small sizes of anthracite. Bulletins are now available on the southern and northern Tennessee coal fields. Field work in Randolph County, West Virginia, has resulted in the discovery of a large area of excellent New River coal which is undergoing active development.

Ore Deposits.—Idaho is studying metalliferous deposits of four areas in the state. Illinois is preparing a revised report on the fluorspar deposits of Hardin County. Michigan initiated a magnetic survey of the copper-bearing series of rocks of the northern peninsula. Work was done on the mineral deposits of northeastern Minnesota. Much careful study was given the lead and zinc fields of

Ottawa County, Oklahoma. Virginia completed a study of the future iron ore industry, in cooperation with the U. S. Geological Survey. Tennessee revised the manuscript on the Brown iron ores of the western highland rim. Wisconsin continued a magnetic survey in eighteen townships in Burnett and Polk counties and made a valuation of various mines for the Tax Commission. Wyoming made a general inspection of mines, metallic and non-metallic, not including coal and has prepared a list of producers and purchasers of mineral products.

STRUCTURAL MATERIALS

Cement materials were studied by Minnesota and North Carolina; clays by California, Georgia, Missouri, North Carolina, Pennsylvania, and Washington; building stones by Indiana and Pennsylvania; road-making materials by Illinois, Oklahoma, South Dakota, and Wisconsin; molding sand by Iowa and New York, and limestone for sewage filter beds by Illinois. Illinois has in press a publication on the economic resources of the St. Peter sandstone of the state and is preparing a report on the sand and gravel resources of northeastern Illinois.

WATER RESOURCES

Idaho made a careful study of the hot springs of the state and investigated underground water resources for several areas within the state. Illinois has in press a report on the stratigraphy and geologic structure of northern Illinois and is studying the water resources of the glacial drift of central Illinois. Minnesota studied the water supply of western Minnesota. New Jersey continued the gaging of surface streams and made quantitative studies of underground water. Pennsylvania is preparing bulletins based on previous water resource work. In cooperation with the U. S. Geological Survey, Virginia collected data of flow at 65 gaging stations and completed the manuscript on the water resources of Virginia. Arkansas began stream gaging work on a Federal-State cooperative basis, and eleven stations have been established.

ENGINEERING GEOLOGY

The Illinois Geological Survey is studying for the State Highway Department the geological problems involved in the design, location, and maintenance of paved highways.

SOILS AND DRAINAGE

Maryland has completed her soil survey. Washington has started the

compilation of statistics but no specific studies have been undertaken. Illinois is cooperating with the State Soil Survey in a study of the soil profiles of the state and problems concerning the classification of soils, and is also revising its bulletin on the Engineering and Legal Aspects of Land Drainage in Illinois including a drainage reclamation map of the state.

RECLAMATION AND IRRIGATION

BY HUGH A. BROWN

BUREAU OF RECLAMATION, DEPARTMENT OF THE INTERIOR

THE PROGRAM

Projects.—A conservative and comprehensive construction program and marked progress in settlement are the two outstanding features of Federal reclamation during the past year. Under the 10-year program of construction adopted by the Department of the Interior, which will absorb all the funds available from authorized sources for the next ten years in the completion of the older projects and the construction of those recently authorized by Congress, the Bureau of Reclamation has been engaged in construction work of a magnitude comparable with that of any period in its history.

Settlers.—Even more attention has been given to the human problems on the projects. All settlers on public land during the year were carefully selected on the basis of approved qualifications of industry, experience, character, and capital. A beginning has been made in affording settlers expert advice and direction in their agricultural programs. Soil surveys have been made and land has been classified on the basis of its potential productivity. The reawakening of interest in irrigated farm homes is indicated by the fact that 283 settlers filed on public land farm units opened to entry during the year. A number of transfers of farms were also arranged for settlers who had been attempting unsuccessfully to farm land incapable of supporting a family. Twenty-three farms in private owner-

ship for which the bureau was the selling agent, were sold to new settlers at reasonable prices and on amortized payments over a period of twenty years.

FINANCES

The Appropriation Act.—The appropriation act of January 12, 1927, provided funds for the fiscal year ending June 30, 1928, carrying a total of \$11,798,800. Among the items in the act were \$605,000 for construction of Stony Gorge dam, Orland project, California; \$400,000 for the construction of the Payette division of the Boise project, Idaho; \$700,000 for the construction of a power plant at American Falls dam, Idaho; \$400,000 for the construction of the Gravity Extension Unit of the Minidoka project in the same State; \$1,000,000 for the construction of Gibson dam, Sun River project, Montana; \$2,000,000 for the commencement of construction of the Owyhee project, Oregon-Idaho; \$850,000 for the construction of the Vale project, Oregon; and \$2,000,000 for the continuation of construction of the Kittitas division of the Yakima project, Washington. Reflecting the interest of Congress in the need for funds to be devoted to the human problems on the projects, an appropriation of \$100,000 was made for settlement and development work. Another small appropriation of \$15,000 provided for a continuation of the investigations being made by the bureau of oppor-

RECLAMATION AND IRRIGATION

tunities for reclamation and planned group settlement in the Southern States.

Readjustment under New Contracts.—During the fiscal year 1927 operation was assumed by the water users' associations or irrigation districts, under appropriate contracts for the repayment of the construction costs, on the Fort Shaw division of the Sun River project, Montana; the Interstate, Fort Laramie, and Northport divisions of the North Platte project, Nebraska-Wyoming; the Newlands project, Nevada; the West and East divisions of the Umatilla project, Oregon; the Strawberry Valley project, Utah; and the Garland division of the Shoshone project, Wyoming. The Huntley project, Montana, assumed operation of the project on December 31, 1927. Sixteen projects or divisions of projects are now being operated by the water users under 30 contracts with the accredited organizations of the water users.

Expenditures.—During the fiscal year 1927, the total income to the Bureau of Reclamation was \$9,680,719.05. The total operation expense of the year was \$1,815,367.55, a decrease compared with the previous year of \$586,949.36. The total payments received from water users for operation and maintenance were \$1,628,985.46. The excess of operation and maintenance payments over receipts for the period amounted to \$186,382.09. The amount appropriated for construction was \$4,443,000, not including reappropriations, and the amount expended on construction was \$5,189,025.93. The total payments by water users on both construction and operation and maintenance amounted to \$4,260,221.35.

Total funds made available for expenditure to the end of the fiscal year 1927 since the passage of the reclamation act of June 17, 1902, are summarized as follows:

Accretions to the reclamation fund to June 30, 1927:	
Public land sales	\$108,278,914.79
Oil leasing receipts	31,663,483.92
Town lot sales	579,796.08
Potassium act receipts	34,614.22
Receipts under Federal water power act.....	31,442.41
Total Receipts	\$140,588,251.42

Special appropriations and bond loan		\$18,169,412.69
Collections for construction, operation and maintenance, and incidental operations		71,554,609.42
Total		\$230,312,273.53
Disbursements		220,787,523.00
Balance		\$9,524,750.53

RESULTS

Construction.—One hundred and seventeen storage and diversion dams, having a combined volume of 20,206,350 cubic yards, built by the bureau, were in operation during the year. The bureau also operated 16,156 miles of canals, waste-water ditches, and drains, of which 133 miles were constructed during the year. Canal structures constructed number 1,413, bringing the total of such structures to 145,294. The bureau also constructed 155 bridges, 398 culverts, 52,805 linear feet of pipe, and 77 flumes. Earth and rock excavation amounted to 4,809,792 cubic yards, making a total to the end of the fiscal year of 256,426,258 cubic yards. Completed dams include the American Falls dam on the Snake River, in Idaho, a concrete gravity structure flanked by earth embankments on each end, with a maximum height of 83 feet and a total length of 5,227 feet; the McKay dam on McKay Creek, in Oregon, a gravel embankment with a volume of 2,287,010 cubic yards, a crest length of 2,700 feet, and a maximum height of 165 feet; and the Guernsey dam on the North Platte River, in Wyoming, a sand, gravel, and rockfill structure, 105 feet high, with a crest length of 560 feet. Work was begun on the Gibson dam, Sun River project, Montana, a concrete arch 205 feet high, with a crest length of 882 feet and a volume of 160,000 cubic yards; and on the Stony Gorge dam, Orland project, California, a reinforced concrete structure of the Ambursen type, 135 feet high, with a crest length of 868 feet and a volume of 41,500 cubic yards. Construction continued on the Kittitas division of the Yakima project, Washington, on the Vale project, Oregon, and on the Owyhee project, Oregon-Idaho. Contract has been awarded for the construction of Echo

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dam on the Salt Lake Basin project, Utah.

Agricultural Results.—During 1926, the latest data for which statistics are as yet available, the works of the Bureau of Reclamation provided a water supply for the irrigation of 1,844,550 acres on the Federal irrigation projects. Of this area 1,411,020 acres were irrigated and 1,328,810 acres cropped, producing crops having a gross value of \$60,369,620, a decrease of \$17,239,360 compared with 1925, owing largely to the decline in the price of cotton on the southwestern projects and of apples on the northwestern projects. Even so, however, the average value of crops per acre amounted to \$45.43 compared with the estimated average value of \$19.07 per acre in the same year for the ten leading crops, comprising nearly 90 per cent of the area of all field crops, for the United States as a whole. The high acre average on the reclamation projects is the result of an adequate water supply and improvements and cultivation above the average. In addition the bureau furnished water under Warren Act or

other water service contracts for the irrigation of 1,097,190 acres of private land adjacent to the projects, 949,590 acres of which were cropped producing crops valued at \$49,750,040. The gross value of crops grown during the last ten years on land irrigated from works constructed by the bureau amounts to more than a billion dollars.

Crop Distribution.—Alfalfa was the leading crop from the standpoint of acreage, being grown on 450,737 acres, or 33.1 per cent of the total cropped area. The value of the crop was \$11,638,496, or 19.2 per cent of the total value of all crops. Cotton was grown on 209,852 acres on five projects, and including the seed was valued at \$13,624,785, representing 22.5 per cent of the total value and reflecting the decline in price from the previous year, when the crop was valued at more than \$21,000,000. White potatoes, although grown on only 3 per cent of the area represented 10 per cent of the total crop value. The accompanying table gives a distribution by large groups of the crops grown on the projects in 1926.

CROP ACREAGE AND VALUE, 1926

Crop	Acreage Cropped		Value		
	Total	Per Cent	Total	Per Cent	Per Acre
Cereals	319,200	23.5	\$ 6,588,287	10.9	\$ 20.63
Other grain and seed	36,763	2.7	1,280,030	2.1	34.82
Hay and forage	717,713	52.7	14,875,939	24.5	20.72
Vegetables and truck	93,203	6.7	13,460,126	22.2	144.42
Fruit and nuts	44,478	3.3	5,894,773	9.7	132.53
Sugar beets	60,779	4.5	4,512,569	7.4	74.24
Cotton lint and seed	209,852	15.4	13,624,785	22.5	64.92
Other miscellaneous	26,110	1.9	428,391	.7	16.41
Duplicated land acreage	146,628	11.0			
Total	1,361,470 ¹	100.0	\$60,664,900	100.0	\$ 44.56

¹ 32,660 acres cropped without irrigation, producing crops valued at \$295,280.

SETTLEMENT

Methods.—During the past year the settlement work of the bureau has shown marked progress. Numerous conferences have been held by the Commissioner and the Director of Reclamation Economics with officials of the colonization departments of the various railroads serving the projects, State colonization organizations, chambers of commerce, and other agencies interested in the set-

tlement and development of unoccupied project lands.

On March 1, 1927, the bureau opened to entry 145 public land farm units on the Tule Lake division of the Klamath project, Oregon-California. The opening was widely advertised and received the active support of the Oregon State Chamber of Commerce and the Southern Pacific Railway. Applications for all the farm units were made by a high grade of

settlers, all of whom had the requisite qualifications of industry, experience, character, and capital. By the end of the year a large number of settlers were on the ground, building homes, erecting fences, and carrying on other developments.

On July 14, 1927, another area of public land, comprising 122 farm units on the North Platte project, Nebraska-Wyoming, were opened to entry. Practically on the date of the opening more than 250 applications were received at the local project office and all except six of the applicants were adjudged by the Board of Examiners to be men of an exceptionally high grade, fully qualified under the regulations.

On the Willwood division of the Shoshone project, Wyoming, 54 farm units were opened to entry on June 1, 1927. At the close of the year 16 prospective settlers had personally visited these units and 13 had remained to take up farms. Nine other applications were pending, and it is expected that all these units will have been filed on before the next irrigation season.

Appraisal.—On three projects containing relatively large areas of unoccupied farms in private ownership, the bureau obtained options for the sale of a number of these farms to prospective settlers at prices fixed by independent appraisal. The terms of sale are 10 per cent of the purchase price at the time of purchase, simple interest at 6 per cent on the balance for the next two years, and the remainder to be repayable in 36 amortized payments with interest at 6 per cent. Options were obtained on 95 farms on the Belle Fourche project, South Dakota; on 77 farms on the Lower Yellowstone project, Montana-North Dakota; and on 64 farms on the Orland project, California.

Illustrated booklets have been issued describing these opportunities, listing the farms for sale, and giving a brief statement of their improvements. A number of farms on each project had been disposed of at the close of the year, with excellent prospects for the sale and settlement of many others before the next season. One handicap in the selling program

is the lack of habitable dwellings on many of the farms.

More settlers are needed on the Milk River and Sun River projects, Montana; the Grand Valley and Uncompahgre projects, Colorado; the Riverton project, Wyoming; the Yuma project, Arizona-California; and the Rio Grande project, New Mexico-Texas. Plans are being made for a conference in Washington, D. C., probably in January or February, 1928, of State, railroad, and other agencies interested in settlement problems, to decide on further steps to be taken to interest prospective settlers in these opportunities for obtaining a farm home in the irrigation region.

Statistics.—There are 38,091 irrigated farms on the Federal irrigation projects under the Bureau of Reclamation, with a population of 140,625. The 204 project cities and towns support an additional population of 390,193. Scattered throughout the projects are 667 schools, 645 churches, and 137 banks with deposits of \$127,103,720.

Lessening Speculation.—As a further aid to the prospective settler and to avoid speculation in irrigable land through pyramiding of prices, the private land owners on new projects proposed for construction are required to sign what is known as the "incremented value" contract which binds the landowner signing it, if he sells his land for a price in excess of the valuation determined by independent appraisal, to apply one-half of the excess upon the cost of the water right for his land. The evil of large ownerships of land is attacked by another form of contract which provides for the subdivision and sale of such land, the owners being obligated to select from their holdings the portion which they wish to retain (not exceeding 160 acres), the remainder to be disposed of at the appraised prices.

SOUTHERN INVESTIGATIONS

Work has been continued by the Bureau of Reclamation on the study of opportunities for reclamation and planned group settlement in the South. A preliminary report has been issued, prepared by three special ad-

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visers appointed by the Secretary of the Interior to investigate properties selected for this study by the States of North and South Carolina, Georgia, Alabama, Mississippi, and Tennessee. Since the publication of the report, a tract of land has also been designated by Florida for investigation. Agricultural and soil surveys are being made and tentative crop programs set up, the aim being to include crops for which there is a market and which, if grown in the rotation worked out, will maintain and increase soil fertility. Statistics have been gathered showing what is being grown on each tract and the yield and values of the different crops. A census has also been taken of the livestock on each farm and the character and value of improvements and implements. Part of the land is uncultivated, and information is being obtained to show why it is not being cultivated and how long it has been idle. Statistics are also being secured on tenancy and housing conditions.

These data when finally compiled and collated will indicate definitely the advantages which would accrue to these communities through the introduction of different crops, better methods of tillage, a rural organization

for teamwork in business, especially in the marketing of their products, and the influence which the example of these planned group settlements will exert on each State as a whole.

BUREAU OF INDIAN AFFAIRS

The 84 projects of the bureau comprise an area of 1,390,000 acres, of which approximately 690,000 acres are under constructed canals. Of the latter area, 117,189 acres are irrigated by Indians, 113,402 acres constitute irrigated Indian leased land, and 131,427 acres land owned and irrigated by whites.

The cost of construction, operation and maintenance, and administrative expenses during the fiscal year 1927 amounted to \$1,665,000, and the total cost of such items up to the end of the fiscal year amounted to about \$36,700,000.

Collections of charges from the water users to the end of the fiscal year amounted to \$979,559 on construction and \$2,638,311 on operation and maintenance.

The Coolidge Dam, now under construction, will increase the acreage under constructed ditches to a considerable extent and will also necessarily increase the cost.

PUBLIC LANDS

BY WILLIAM SPRY

COMMISSIONER OF THE GENERAL LAND OFFICE, WASHINGTON

AREA

The public lands of the United States are disposed of through the agency of the General Land Office, at Washington, D. C., under the supervision of the Secretary of the Interior, pursuant to specific acts of Congress providing for the various forms of entry, location, selection, easement and grant.

The public domain of today, exclusive of Alaska, embraces an area of more than 193,000,000 acres, located in the States as indicated in the table on the succeeding page.

The area of of the public domain exceeds the combined surface areas, land and water, of the States of

Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Delaware, Pennsylvania, Maryland, Virginia, West Virginia and Ohio, and the area of Alaska (378,165,760 acres) is approximately double that of the States named. In addition pending entries of record in the General Land Office, representing claims to public lands in process of perfection but in which title has not been granted, embrace an acreage almost equal to that of the State of Pennsylvania.

Locations.—The lands in the thirteen original States, Connecticut, Delaware, Georgia, Maryland, Mas-

PUBLIC LANDS

	Area in Acres		
	Surveyed	Unsurveyed	Total
Arizona	9,326,000	7,635,100	16,961,100
Arkansas	227,529	.....	227,529
California	14,847,607	5,763,270	20,610,877
Colorado	6,488,599	724,701	7,213,300
Florida	5,780	8,132	13,862
Idaho	8,815,937	2,031,945	10,847,882
Minnesota	248,740	.....	248,740
Montana	6,730,447	212,080	6,942,527
Nebraska	30,001	.....	30,001
Nevada	30,855,598	22,256,875	53,112,473
New Mexico	15,535,999	1,529,844	17,065,843
North Dakota	133,814	.....	133,814
Oregon	13,065,803	110,231	13,176,034
South Dakota	383,800	.....	383,800
Utah	13,633,032	12,626,140	26,259,172
Washington	922,120	9,424	931,544
Wyoming	18,636,242	942,848	19,579,090
Grand Total	139,886,998	53,850,590	193,737,588

sachusetts, North Carolina, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, South Carolina and Virginia, and also in Texas, were never a part of the public domain, and their disposition is governed by the laws of those States.

There are no public lands in the States of Kentucky and Tennessee and none is known remaining undisposed of in Illinois, Indiana, Iowa, Missouri and Ohio. Small areas remain in the States of Alabama, Kansas, Louisiana, Michigan, Mississippi, Oklahoma and Wisconsin in widely scattered tracts.

ADMINISTRATION

Continuing the policy of securing the most economical administration of the public lands consistent with efficient service to the public, the number of district land officers was reduced during the fiscal year ended June 30, 1927, from 42 to 29. This was effected by the consolidation of some offices and the discontinuance of others. In some of the States the last office has been closed as the amount of public land remaining subject to disposition has not warranted their retention. In those States the remaining land may be entered by application to the General Land Office.

Legislation.—The year was an active one, the interest shown in the public lands reflecting an apparent improvement in agricultural condi-

tions generally, of which the public land business is a faithful barometer. During the year Congress enacted more than sixty laws relating to the public lands, ranging in importance from the grant of mineral school sections to the States, act of January 25, 1927 (44 Stat., 1026), which will be commented upon further herein, to minor private acts. Among other important laws enacted were those of February 7, 1927 (44 Stat., 1057), to promote the development of potash deposits by the issuance of prospecting permits and leases, and March 4, 1927 (44 Stat., 1452), for the regulation of grazing on the public domain in Alaska. The last named act will enable the Government, through the General Land Office and the Bureau of Education, to exercise an orderly control over the grazing of reindeer, the number of which, owned by natives and others, is estimated to exceed 500,000.

Oregon Tax Case.—The act of July 13, 1926, *supra*, was an outgrowth of the forfeiture to the government of the Oregon and California Railroad granted lands, title to which was revested in the United States by the act of June 9, 1916 (39 Stat., 218). It authorized payment to the counties in which the forfeited lands were situated (eighteen counties in Oregon and one in Washington) of an amount equivalent to what they would have received in taxes had title to the land not revested in the

United States. The total of claims presented under this act for the period from 1916 to 1925, inclusive, was \$6,741,466.94, of which there has been certified as due the counties the sum of \$6,022,433.44, the difference being accounted for by disallowances of \$266,969.35, and one claim of \$452,064.15 pending. Claims of sixteen of the counties for the year 1926 have been received, amounting to \$669,860.98.

School Grants.—In aid of schools, Congress has made liberal grants to all the public land States upon their admission into the Union and in addition to numerous special and quantity grants has given them certain sections of land in place provided the land was not of known mineral character at the time the grant would otherwise have vested. The act of January 25, 1927, hereinbefore mentioned, enlarges the grant of school sections in place by permitting title to vest in the State notwithstanding the known mineral character, subject to valid claims or reservations which may have attached prior to the enactment of the statute. While the number of sections valuable for mineral which will pass to the States under this additional grant is not known, it may be stated that under their original grants some of the States received one section, some two, and others four in each township in the State.

GENERAL LAND OFFICE

While it is not possible within the limitations of this article to even touch upon the major portion of the varied activities of the General Land Office, a statement of some of the items may be of public interest.

Original entries and forms of disposition equivalent thereto embraced 3,746,336 acres, of which 2,663,799 acres were allowed under the stock-raising homestead law of December 29, 1916. The area for which patents issued (the passing of title) amounted to 4,456,893 acres, which exceeds the combined land area of Connecticut and Delaware by more than 114,000 acres.

Final proofs in support of 13,952 homestead entries were approved for

the issuance of patent. Seven driveways for stock were created and 24 modified. The total gross area included in driveway withdrawals at the close of the fiscal year was 9,185,522 acres. Action was had on 333 applications for railroad rights of way, of which 82 were approved.

FIELDS OF ACTION

Water Power.—Withdrawals in aid of the development of water power under the Federal Water Power Act aggregated 71,751 acres. Other withdrawals for various purposes affected 1,909,688 acres, and 2,493,806 acres theretofore withdrawn were restored to entry. There were added to national forests from the public lands 42,103 acres, and 168,671 acres were withdrawn for forest purposes. There are now 159 national forests embracing 183,938,106 acres, of which a little over 86 per cent is public land.

Coal and Oil.—Twenty-five thousand, nine hundred and ninety-six acres were withdrawn for coal classification, and 619,175 acres theretofore withdrawn were restored to entry, leaving 30,535,530 acres still withdrawn for coal classification. Five hundred and twenty-nine thousand, two hundred and fifty-five acres under withdrawal as potentially valuable for oil were restored to entry, leaving 5,272,362 acres still under withdrawal.

Phosphate and Potash.—The area withdrawn as valuable for phosphate after restoration during the year of 12,104 acres is 2,307,919 acres. Other withdrawals affecting considerable areas were made for various purposes such as reclamation, drilling sites to test the existence of potash, public water reserves, recreational sites, etc.

War Grants.—Under the provisions of Public Resolution No. 28 of February 14, 1920 (41 Stat., 434), as amended January 21 and December 28, 1922 (42 Stat., 358, 1067), 3,650,004 acres were opened or restored to entry subject to a preference right over the general public of ex-service men of the World War.

Timber.—The restoration to entry during the year of 32,000 acres of the forfeited Oregon and California rail-

PUBLIC LANDS

road lands in Oregon brings the total of such lands opened to entry to 1,062,000 acres. Sixty-six sales of timber from these forfeited lands were also made, for which the sum of \$556,654.60 was received, making the total receipts from timber sales to date \$4,090,893.42. Timber sales from revested Coos Bay Wagon Road Grant lands, in Oregon, brought \$114,303, bringing the total to date to \$1,087,287.54.

Indian Patents.—Five thousand and eight trust patents on Indian tribal allotments were issued, conveying 384,310.40 acres, to be held in trust by the United States for the Indians. In addition there were issued 1,400 patents conveying title in fee to Indians or their heirs or assigns to 174,048.79 acres formerly held in trust by the United States.

Prospecting.—Under the Mineral Leasing Act of February 25, 1920, permits to prospect for oil and gas were issued to the number of 4,805, and 52 leases of demonstrated oil land. Consideration was given 58,750 applications for prospecting permits, of which 53,945 were finally rejected. Of outstanding permits 1028 were canceled.

Fifty-nine potash prospecting permits, 11 sodium and 86 coal, were issued, and 25 coal leases. Four hundred and sixty-eight mineral entries were approved for the issuance of patent. Receipts from bonuses, rentals and royalties under the Mineral Leasing Act amounted to \$6,669,518.76, of which 37½% goes to the State in which the lands are located, 52½% to the federal reclamation fund, and 10% to miscellaneous receipts in the U. S. Treasury.

Survey and Field Service.—The Surveying Service accomplished 17,877.7 miles of surveying in 24 public land States, and in addition numerous miscellaneous surveys including town sites, islands, lighthouse and military reservations, grant boundaries, etc. During the year plats of survey and resurvey were accepted and placed on file involving an aggregate area of 5,160,072 acres. The Field Inspection Service investigated 16,320 cases and handled numerous hearings and court cases.

Land Office Receipts.—The following table shows the receipts of the General Land Office for the fiscal year ended June 30, 1927, and the disposition made of same:

STATISTICS

Source of Receipts	Disposition in the Treasury			
	General Fund	Reclamation Fund	State Funds	Total
Sales of public lands	\$ 172,046.37	\$ 418,427.79	\$ 21,658.56	\$ 612,132.72
Fees and commissions	90,305.76	405,298.94		495,604.70
Receipts under mineral leasing act ..	669,483.03	3,500,059.95	2,500,042.83	6,669,585.81
Sales of land and timber:				
Ore. & Cal. R. R. grant	612,161.41			612,161.41
Coos Bay Wagon Road grant	85,496.54		28,498.85	113,995.39
Sales of reclamation town and camp sites		10,162.27		10,162.27
Royalties and rentals from potash deposits		4,392.77		4,392.77
Sales town lots, Alaska	1,950.81			1,950.81
Sales of timber, Alaska	7,512.02			7,512.02
Coal royalties, Alaska	2,198.08			2,198.08
Power permits	17,454.25			17,454.25
Miscellaneous	33,852.36			33,852.36
Total	\$1,092,460.63	\$4,338,341.72	\$2,550,200.24	\$8,581,002.59
Sales of and royalties from Indian lands				620,694.66
Aggregate				\$9,201,697.25

Value.—Illustrative of the enormous value of the public domain in resources which play such an important part in the life of the people

of this country, it is interesting to note that there was recently held at the Sacramento, California, Land Office, a public auction of the right to lease 280 acres of public land for oil and gas. For the three units into which the tract was divided bids of two oil companies were accepted ag-

gregating \$672,000. This sum, it should be understood, is in effect a bonus, entitling the companies merely to the right to lease the land, and in addition to this they must pay a royalty on production in accordance with the individual terms of their leases.

LAND TITLES AND RESTRICTIONS

BY S. J. BRANDENBURG

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RESTRICTIONS ON LAND TITLES

Basis.—All restrictions on property rights in land may be assumed to rise out of the recognized need of the public generally to the enjoyment of some of the benefits that are inherent in land ownership. Among these restrictions may be mentioned: (1) Easement, the right of others, established by custom or by law, to enter upon, pass through, or otherwise enjoy the lands of a private proprietor. The social utility of such a limitation on the proprietor's rights are obvious where all lands are privately owned and population is numerous and active. (2) Taxation is universally recognized as a socially justifiable burden to be imposed upon privately owned lands. (3) The special assessment is a means of meeting the cost of improvements of a public character which also benefit in a special way the property against which the assessment is laid. This burden on land has been frequently imposed of late, particularly by municipalities for financing public works and by states for the purpose of effecting highway improvements.

Land Condemnation.—Perhaps the most significant restriction on landed property, especially in the prospects of its future extension, is (4) land condemnation—the exercise of the power of eminent domain in respect to land. Under this power, not only land in the corporeal sense but all easements, privileges and other incorporeal rights arising from private property in land may be taken for public purposes on the payment of equitable compensation. The exist-

ence of the power of eminent domain in the state has been described as "an attribute of sovereignty, inherent in the state." The right may be exercised by the state itself, it may be delegated to public or private corporations, or to individuals entrusted with the performance of undisputed public functions.

Public Projects.—The final test of the validity of the exercise of the power is the public welfare, and in a dynamic state new circumstances constantly arise in which public necessity or convenience can be served only by resort to this power. Since the war, several Central and East European states, in order to procure the economic and social strength attributed to a wide diffusion of ownership in agricultural lands, have condemned large private estates and resold the land in small parcels on easy, long-term payments to peasant proprietors. In our own country the Supreme Court has recently held the condemnation of land for a "scenic highway" to be justifiable and valid on the grounds of "public purpose." The rapid growth of the movement for city planning and zoning has brought forth another aspect of public purpose; also, the consolidation of land for municipal, state, and national parks; for the protection of water-sheds safeguarding municipal water-supplies; for publicly owned forests; and for numerous other beneficial public projects. The recently demonstrated need for additional flood protection will undoubtedly give rise to new extensions of the principle.

PUBLIC SERVICE COMMISSIONS

RECLAIMING LANDS

In some of our states are thousands of acres of privately owned non-arable lands, such as the cut-over lands of the older lumber regions. The movement is growing to reduce such lands from private to public ownership by means of condemnation; to rescue them from their present status as waste and non-productive lands, to save them from becoming sub-marginal agricultural lands and to re-forest or otherwise utilize them in a beneficial public manner,—a thing which private owners, lacking the incentive of near-at-hand profits, will not attempt. Likewise, the power is being used increasingly to restore to public ownership unexploited lands bearing forests, minerals or other natural resources. Private property in such lands entails exploitation, not only for the sake of present private profits, but to meet the heavy burden of actual year-to-year carrying charges. Thus condemnation is used to secure a "public benefit" for future generations.

FLOOD CONTROL

The necessity for flood control, for impounding and protecting adequate water supplies for growing urban areas, for irrigation projects, for giant power utilization; and the construction of aqueducts, conduits and other devices for carrying water or power to the points of consumption, appear more conspicuously as public purposes. Such developments will involve an increasing use of land condemnation proceedings in the immediate future.

EXCESS CONDEMNATION

Excess condemnation is receiving increasing attention in the United States. It may be defined as the tak-

ing of more land than is needed for the carrying through of the immediate public purpose. For example, condemnation used for widening or straightening streets may leave small or misshapen parcels in the hands of the several private owners. Such lands, lying outside the limits of the primary improvement, if they remain in control of the original private owners, may be utilized, if at all, in a way not in furtherance of the public purpose, or may even detract from it. Hence the condemnation of lands in excess of those needed for the immediate improvement may often be essential to the attainment of the maximum public benefit from the improvement.

This device has been successfully used in Europe, particularly in England, but it has been only slightly used in the United States. The courts of some states have held it an unwarranted and unconstitutional extension of the power; other states, by legislation, have authorized its exercise for specific named improvements; a few states have expressly authorized it by constitutional amendment. The highest courts of several of our states have recently approved the principle. Clearly the tendency at the present time both in statutes and in court decisions is to enlarge the power of land condemnation in that it may be exercised by the governing unit or delegated to a private corporation or individual; it has been extended to include roads, bridges, navigation, power, water supply, drainage districts, telephone, telegraphs, and public utilities generally; it may include more than is immediately necessary for the primary purpose; it is justified or denied on the basis of clearly established public benefit.

PUBLIC SERVICE COMMISSIONS

By JOHN BAUER

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Practically every state has created a public service commission, or public body under a name indicating its

function, to regulate the public utilities within its jurisdiction in the interest of the public at large. Why

the commissions? What are their particular functions? What are their principal problems, and what important developments are in progress?

PUBLIC UTILITIES

Functions and Regulation.—Public utilities include railroads, street railways and other local transportation, electric light and power, gas, water, telephones, telegraphs, and all properties which have become regarded as endowed with a public interest essentially different from ordinary business. They are sharply distinguished as to established public policy and law. They are recognized primarily as public in their functions even though the ownership or title to the properties is private and is entitled to the constitutional protection of private property. While all business is subject to regulation under the police power of the state providing for safety, health, morals and general welfare of employees and the public at large, ordinary business is free to render such services or produce such commodities as it pleases and to fix such rates or prices according to its own business judgment. In these respects the regulation of public utilities is fundamentally different from ordinary restriction under the police power. It assumes control of the standards of service, including quality and quantity, and prescribes the price or rates that may be charged for service.

Privileges and Distinctions.—The reason for the distinction between the utilities and ordinary properties rests partly upon historical considerations, but principally upon (1) the importance of the service, (2) the character of the utility organization, and (3) the special privileges exercised in furnishing the service. What makes a utility, in the first instance, is its inherent importance to large numbers of people. All the clearly recognized utilities are concerned with services which are essential to modern life especially in the cities. If they were not supplied by private companies they would have to be furnished by government, federal, state or local communities. Because of their importance, they are quasi-pub-

lic services. In the second place, utilities are organized largely upon a monopolistic basis, while ordinary industry is competitive. They are regarded by economists as natural monopolies; competitive organization is self-destructive and leads to monopoly, partly because of the physical limitations as to location of the properties, but chiefly because of the large capital requirements and the prohibitive cost of plant duplication and of maintaining competitive operation. As a matter of public policy, therefore, monopoly has not only been permitted by law, but is encouraged and protected. To prevent abuse by monopoly, public regulation of service and rates is intended to furnish the protection to consumers which in ordinary industry is supplied by the forces of competition.

Third, practically all the utilities exercise special privileges which are not granted to ordinary business. This includes (1) the right of eminent domain under which private property may be condemned for the purposes of the utility, and (2) the grant of special franchises for the use of streets, highways and other public places for the purposes of operation. While historically these special privileges have furnished primarily the occasion for instituting regulation, these grants, however, could not have been made to the companies if they had not been already regarded as rendering public services essentially different from ordinary business.

SCOPE OF REGULATION

Regulation and Management.—The scope of regulation includes all activities which have a public bearing, but it is not intended to take the place of management. The line of demarcation, however, between regulation and management is not a definite one; the extent of regulation depends upon particular considerations as the public interest may actually be affected. The primary objectives of regulation are to assure the public proper service and to fix reasonable rates. There is also a third, which is ordinarily not directly expressed, to protect the investors; to prevent speculation and

to assure the holders of securities of the reasonable return to which they are entitled. The actual ownership in the properties has come to be more and more widely distributed, so that the protection of the investors, most of whom are small holders, has come to be a recognized public function although not directly avowed in the statutes.

Control of Accounts.—There are also various incidental functions. One of the most important is the control of the accounts of the companies; uniform systems of accounts are prescribed, and the companies are required to record their financial transactions accordingly. The purpose is to make available accurate records as to investment, cost of operation, and revenues, so that the rates can be determined upon a factual basis. Usually annual reports are required, setting forth in detail the results of operation as recorded in the accounts and other records. In a number of states, the issuance of securities require the approval of the commission, and the purposes for which securities may be issued are defined by statute. The purpose is to prevent financial irregularities and especially to restrict the issuance of capital obligations to the actual investment in the properties so that the amount may not exceed the "fair value" for rate-making purposes.

Rate-Making.—The phase of commission regulation that has received most discussion in recent years, and which usually takes up the major energies of the regulatory bodies, is rate-making. In this department there has been sharp difference of opinion and a great deal of litigation in establishing an exact basis of procedure. The companies are limited to reasonable rates. The statutes, however, do not prescribe the standards of reasonableness, nor the policy and procedure in fixing reasonable rates. The recognized course is to base rates upon the cost of service, including a fair return on the properties used and useful in furnishing service. The total cost thus includes (1) operating expenses, (2) taxes, and (3) the return on the properties. The first two elements consist of ac-

tual costs and are taken directly from the accounts, with the general restriction that the amounts must be reasonable; extravagant expenditures are excluded.

FAIR VALUE

Legal Standard.—The greatest difficulty in rate-making appears in determining the return allowed upon the properties. The general legal standard as laid down by the Supreme Court of the United States is that a company is entitled to a fair return on the "fair value" of the properties. Unfortunately, however, the exact measure of fairness has never been determined, and there is wide difference in the theories supported by the interests affected. The companies are almost uniformly demanding that "fair value" must be based upon the present reproduction cost of the properties, while the public representatives urge "prudent investment" as the proper basis. The difference in these bases is due to the tremendous rise in price level which has taken place since 1914 or since the pre-war level of costs. In the case of properties which were constructed to a large extent prior to the war and which have not been subjected materially to obsolescence or other depreciation, there is a substantial difference between valuations on the reproduction cost and prudent investment. This applies extensively to railroads, gas companies, and water works. In the case of utilities, however, which have been developed largely since the beginning of the war, or in which there has been extensive reconstruction due to rapid improvements made available through advances in the arts, the difference in results as between reproduction cost and prudent investment is not material. This applies to electric properties, telephones, and particularly to the newer mode of transportation,—buses.

Basis for Rates.—The uncertainty as to what constitutes "fair value," also the fact that regulation would be rendered extremely difficult if not impossible under reproduction cost if this were to be accepted as law, have brought about wide discussion of the

proper rate base and have started movements to define precisely the basis of valuation to be adopted by the commissions for rate-making. In the case of the railroads subject to federal regulation, the Interstate Commerce Commission in the so-called St. Louis & O'Fallon recapture case laid down definite policies and methods by which the future rate base would be determined under the administration of the Interstate Commerce Act. Under the 1913 Valuation Act, the Commission was required to make a valuation of all the railroad properties in the country, fixing a value for each property as of a given date. Under the 1920 Transportation Act, the Commission was required to fix rates according to a regional plan, grouping the properties by districts and fixing rates so as to bring a return of $5\frac{3}{4}\%$ upon the aggregate "fair value" of the properties in each region; in recognition of the fact that rates cannot be fixed separately for each company according to its own costs and properties. If, however, any company under the rates fixed upon the aggregate "fair value" within the entire district, realizes more than 6% upon the "fair value" of its own property, one-half of the excess is payable to the Interstate Commerce Commission to be held for general railway purposes, and the remaining one-half is reserved by the company for the benefit of its own properties.

INTERSTATE COMMERCE COMMISSION'S PLAN

Method of Valuation.—To administer the provisions of this Act effectively and to carry out the broad purposes of a system of regulation established in the interest of the country at large, particularly to assure the facilities and improvements as needed by the commerce of the United States as a whole, the Commission in the St. Louis & O'Fallon case adopted essentially prudent investment as the basis of "fair value," and considered reproduction cost as impracticable partly because of its difficulties of administration and partly because of its inherent financial instability. The Commission's

basis consists, in first instance, of the valuations made under the 1913 Valuation Act. This is taken as a fixed sum, to which is added the cost of all improvements and extensions, and there are deducted all subsequent retirements and further accrued depreciation. After the initial valuation, there is thus constantly a definite and non-fluctuating rate base, determined according to exact facts as stated in the records of the companies and reported to the Commission. The latter is thus able to adjust rates readily upward or downward for all of the companies operating in a given region, and then for each individual company it can determine the amount of the excess earnings upon a definite basis. Under reproduction cost there would be dispute at every point of rate readjustments as to the "fair value" for the region as a whole, and in the recapture of excess earnings for individual companies there would be the same difficulty of determining the base upon which to compute the recapture; the purposes of the statute would thus be practically frustrated by the difficulties of administration.

Argument.—On the financial side, also, the basis adopted by the Commission would succeed in carrying out the broader purposes of the statute, while reproduction cost would defeat them. This is due to the constant fluctuation of prices upward or downward, and to the fact that two-thirds of the investment made in the properties has been provided by bondholders and preferred stockholders who are limited to a definite monetary return as fixed by their contracts, and only one-third by the common stockholders who are capable of receiving a variable return according to the changes in price level. Under these circumstances, if reproduction cost were adopted, during rising prices the entire increase in monetary return upon an entire property would go exclusively to the benefit of the common stockholders and would be approximately three times as great as the increase in prices. During falling prices the common stockholders would suffer a decrease in monetary return three times as great as the fall in

prices. During one period, therefore, the common stockholders would receive inordinate returns which would lead to speculation, and during another period they would suffer inordinate losses which would impair the credit of the companies and lead to financial disorganization. Under these conditions, new capital could not be obtained as needed during a period of falling prices and reproduction cost would not meet the purposes of the statute.

Importance of Final Decision.—

The Commission's decision has been appealed to the Federal court and was sustained by a decision handed down on December 10th, 1927. The case will be appealed to the Supreme Court of the United States and will probably be decided during 1928. It involves the fundamental issue between prudent investment as represented by the Commission and reproduction cost as claimed by the company. The final decision will have far-reaching consequence in that it will determine whether the railroads shall obtain about a \$10,000,000,000 greater valuation in the aggregate than they would receive under the Commission's basis. But more important, it will determine whether regulation will be maintained upon an administrable and financially sound basis, or whether the purposes of the statute will be largely frustrated because of the reproduction cost thus imposed upon the Commission by the Supreme Court of the United States.

STATE ISSUES

Difficulties. — The same general issues between reproduction cost and prudent investment appear in public utility regulation under the jurisdiction of the state commissions. Reproduction cost would involve the same administrative difficulties for other utilities as for the railroads, also the same financial instability due to the fluctuating prices and the fixed

financial structure of the companies. Ordinary utilities have approximately 75% of their actual capital investment represented by fixed return securities and only 25% by common stock capable of receiving an adjusted return. Under these conditions, effective and financially sound regulation requires a definite and non-variable rate base, which can be readily determined, subsequent to a single valuation in each case, according to actual facts as shown by the accounts kept under commission supervision. That such a definite and non-variable rate base is essential has come to be recognized more clearly by the commissions themselves; expression to that effect has been made during the past year.

Chairman William A. Prendergast of the New York Public Service Commission at the September, 1927, meeting of the National Association of Railroad and Public Utilities Commissioners, discussed the problem of valuation from the standpoint of effective regulation, and urged the commissions to adopt a constructive program of establishing a definite basis of valuation which may be readily administered and which would provide for the financial stability of the companies. It appears probable that steps will be taken by the commissions to meet the difficulties that have been encountered in rate-making. Such a course, however, is likely to meet with legal difficulties; ultimate recourse to the legislatures may be necessary, and the program must be adjusted to meet the constitutional requirements as fixed by the courts. Without a positive valuation program, the work of regulation will be greatly impeded and the financial standing of the industries subjected to serious instability. To meet this situation properly, appears to be the chief task of the commissions for the immediate future.

MUNICIPAL OWNERSHIP

By H. M. OLMSTED

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POLICY

General.—The United States continues to be the stronghold of private ownership of public utilities, excepting those that have passed out of the list commonly thought of under the designation of utilities to the category of free or non-profit-making services,—such as highways, sewers and street lighting. Private toll roads are not unknown, even in cities—the Long Island Motor Parkway penetrates a borough of Greater New York—and privately-owned sewer systems exist; but these are rare instances. Street lighting, while furnished by private corporations in many cases, is paid for by the municipalities. The outstanding additional exception is water supply; considerations of essentiality, health, sanitation and cheapness have made this a direct municipal function in most cases.

Bridges within the limits of cities are also regularly regarded as a municipal function, for free use; but private toll bridges exist in various localities outside of cities, and continue to be built, although with increasing insistence on public ownership after a period of amortization. This mode of providing bridge facilities is even proposed for cities where debt restrictions interfere with construction by the municipality. Another device, which may be regarded as a form of municipal ownership, is advocated in some quarters to overcome financing difficulties of bridges and also of enterprises of the usual public utility order, in the form of a special municipal corporation, in a special district. The outstanding example of this sort is the Port of New York Authority, operating in two states. Several bridges to connect Manhattan and Staten Island, New York, with the State of New Jersey, are being built by this body; their operating costs, interest and amortization will be paid for out of the revenues from the bridges.

RAPID TRANSIT

New York.—In rapid-transit development the policy of public ownership is becoming prevalent. New York City, which already owns its subways, exclusive of equipment, although leasing them to private operators, is proceeding with a new city project of over \$600,000,000, to be operated by the city, according to present plans. Discussion of a comprehensive transit policy has been active, centering upon the Untermyer report to the Transit Commission, appearing September 25, 1927, wherein elimination of the private interests in rapid transit by a combination of negotiated purchase and enforced "recapture" by payment of amounts fixed by law was recommended. The city administration approved this plan in principle.

Chicago has continued to study means of improving its transit situation, municipally-owned subways being a possibility. As a means of paying for these the levying of special assessments upon benefited property has been actively advocated. This method has sporadically been suggested in New York, and has had prominence in rapid-transit discussions in St. Louis. Chicago has also been the scene of strenuous opposition to efforts to have the State legislature authorize the granting of indeterminate permits to public utility companies, the opposition being based partly upon the claims that the possibility of municipal acquisition would be made much more difficult, as well as that municipal control would be rendered more ineffective, by doing away with definite-term franchises. Thus far such legislation has been prevented.

Philadelphia.—Work amounting to some \$57,000,000 was brought to completion in 1927 on subway extensions, and tentative plans for operation were prepared. Philadelphia is the first city to build rapid transit trunk lines complete with equipment out of

city capital, ready for operation by any licensed operator. The Broad Street subway, nearly completed except for the terminal extension to South Street, represents an investment of around \$100,000,000.

Boston.—The Elevated Railway system was augmented by the opening on November 5, 1927, of the Dorchester extension, which utilizes a steam railroad right-of-way purchased by the city. The Supreme Judicial Court of Massachusetts on November 22 approved in almost all details the constitutionality of the Harriman bill of 1927, contemplating the creation of a metropolitan transit system. The Commonwealth is permitted to lend its credit to such a system so that improvements may be financed at about 4 per cent instead of 6 per cent as under the existing public control. Assessments may be made on land especially benefited by improvements, and these improvements, built with public money, may be leased for rentals less than enough to cover all operating, interest and retirement charges, the deficit to be made up by assessments or by the levying of taxes on communities benefited.

Surface street-railway systems have not exhibited much tangible change. A proposition to negotiate a purchase of the Los Angeles Railway lines became dormant upon the death of the individual owner. In San Francisco, where the franchises of the Market Street Railway Co. begin to expire in 1929, acquisition of its lines by the smaller municipal railway system is expected. The Wilcox report of November, 1927, presented a purchase plan. Seattle has been struggling with its heavy purchase payments and a difficult traffic problem. Detroit continues to be financially successful in the face of declining traffic. In Staten Island, New York, served by two privately-owned systems, one of which was leased in 1922 by the City of New York for operation at a 5 per cent fare, after bankruptcy on the part of the company, the city suspended operation on August 1, 1927, after heavy losses, and was succeeded by privately-owned bus lines. Phoenix,

Ariz., which purchased the private street railway at junk value (\$20,000) in 1925, is proceeding to rehabilitate the system, having approved a \$750,000 bond issue for that purpose in April, 1927.

ELECTRIC LIGHT AND POWER

Private Operation.—In the field of electric light and power the extension of large-scale private operation, with interconnection by high-voltage transmission lines, continues to bring about the shutting-down of many small plants, both private and municipal, and the steady increase in the number of the latter appears to have stopped and a decrease to have set in, the extent of which is uncertain. This field presents a situation where the small communities exhibited the ability to pioneer for themselves in the furnishing of electricity, whereas now, with increasing economic advantages of wholesale production, the power companies are vigorously soliciting this business.

Rate Regulation.—The broad economic factors in this tendency have been supplemented by others of a more directly aggressive sort. In both Iowa and Nebraska, for example, where many municipally owned plants exist in the smaller cities, a live question has arisen as to the cutting of rates by private power companies that also serve some of these same cities, to a level below that of the municipal plants concerned, while rates in cities served only by the companies are kept higher. In Iowa it has been contended that this constitutes illegal discrimination, and also that it can be met by city ordinance, inasmuch as rate regulation of utilities in Iowa lies with the municipalities rather than with a State commission, and Federal questions of confiscation would hardly be involved where the city seeks to keep the company's rates up.

In this interesting situation the prevalent company's efforts for high valuation and rate of return would seem to react against them. No direct court test of these points has been made in Iowa, but in Nebraska a company was required by the State

district court to raise its basic rate to 8¢, after reducing it from 14¢ to 6¢ when the city, Hartington, arranged to acquire a municipal plant by granting a franchise to another electric company which would amortize the plant cost out of revenue based on a 9¢ rate, and then turn the plant over to the city.

Tendencies of Plant Purchases.—In some quarters very high prices are being offered for municipal systems. The Public Service Commission of Maryland recently stated: "This Commission views with grave concern the scramble of holding companies for small, isolated and often entirely obsolete electric and other utility properties and their willingness to pay for such properties prices far beyond the cost of reproducing them. It is convinced that the price paid in excess of the actual value of such properties comes in one form or another and in the long run out of the public's pocket." In other localities, notably in Kansas, small cities have been induced, in consideration of 24-hour service and a "white way" or other improvement in street lighting, to turn their municipal plants over with practically no other consideration, where a single power company served the area in question.

Not all cities approached, of course, are giving up their plants. Some are standing pat, especially where Diesel-engine power is employed, some are purchasing current from the power lines but retaining ownership and operation of the distribution system, and some are purchasing from nearby municipalities. New municipal enterprises are also being established; and 1927 saw the start of construction of the first county-owned hydro-electric plant in the country, in Crisp County, Ga.

WATER SUPPLY

Municipal Control.—In the field of water supply, municipal ownership easily maintains its dominant position. Even the largest city served exclusively by a private distribution system, San Francisco, is providing new sources—the Hetch Hetchy project—by public enterprise, and it is regarded as only a question of time

when the distribution system will be public. About four years' work remains to be done before delivery of water within the city limits. New York City is steadily increasing its huge water-supply system; Gilboa Dam, with storage for 10,000,000,000 gallons of water, was put into service in 1926, and additional sources of water are being sought. Los Angeles has been doing extensive preliminary work relating to the proposed aqueduct to bring water from the Colorado River, 268 miles away. Oakland and eight other Alameda County cities approved Nov. 1, by vote of 9 to 1, a bond issue of \$26,000,000 to acquire a municipal water system to distribute mountain water supply developed by these cities, and expected to be ready in another year.

Indianapolis Rate Case.—The second largest city served exclusively by a private water company, Indianapolis, has produced the most notable public utility rate case of the last two years, culminating in the United States Supreme Court decision in *Indianapolis Water Co. v. McCardle*, wherein the company's claim to a valuation based on present-day reproduction costs, less observed depreciation only, and increased by an additional allowance for going-concern value, were substantially approved. This decision may be regarded as a momentous obstacle to municipal acquisition of existing utilities, on the one hand; and on the other as a strong argument for public ownership in the case of future utility projects. Running counter to this valuation doctrine is that of the Interstate Commerce Commission in the *St. Louis & O'Fallon Railway* case, where a valuation basis approximating prudent investment is followed. The Commission was sustained in Federal district court December 10, 1927. This case is being taken to the Supreme Court whose decision will have an important bearing on municipal utility policy as well as in railroad matters.

OWNERSHIP DISCUSSION

Railroad and Utility Commissioners' Report.—A notable discussion of public ownership occurred during the

STREET TRAFFIC AND REGULATION

year in the report of the public ownership committee of the National Association of Railroad and Utility Commissioners. The committee majority reiterated its stand of previous years in opposition to public ownership, while Joseph B. Eastman, Chairman of the Interstate Commerce Commission, rendered a minority report in favor of public ownership, at least for future projects, and proposing a scheme for operation by a separate public corporation.

Conclusions.—Whether municipal ownership is increasing or decreasing in the United States is difficult to decide. Its chief tangible advances in the last year or two have been in certain large cities where the enterprises in question had already been

municipalized to a large extent or where the policy with respect to the particular utility concerned had been fairly well established previously. The strongest recent advancement of the idea has been in rapid transit with its requirement of huge investment. The chief retrogression apparent has been in the small municipal electric plants, where it is evidently due to extraneous economic factors, reinforced by an intensive sales—and purchasing—campaign, literally high-powered. The general conclusion may be drawn that the public attitude is pragmatic, at least as to immediate considerations, and is little swayed in most cases by a proposed policy that represents a break from tradition.

STREET TRAFFIC AND REGULATION

BY ERNEST P. GOODRICH

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AUTOMOBILE REGISTRATION

During 1927, growth of automobile registration continued nearly as in

the past as is shown in the following table which embraces the records for the past eight years:

Year	Passenger Cars	Trucks	Total	Annual Increase
1920.....	8,225,859	1,006,006	9,231,941	.....
1921.....	9,346,195	1,118,520	10,464,715	1,232,774
1922.....	10,864,128	1,375,725	12,239,853	1,775,168
1923.....	13,479,608	1,612,569	15,092,177	2,852,324
1924.....	15,460,649	2,131,332	17,593,077	2,500,900
1925.....	17,512,638	2,441,709	19,954,347	2,361,270
1926.....	19,293,112	2,844,222	22,137,334	2,182,987
1927.....	20,140,000*	2,985,000*	23,125,000†	987,666

On January 1, 1927, there were computed to have been in the United States one motor vehicle for each five persons. The gasoline consumption of the country apparently increased in a somewhat higher ratio than did the automobile registration, indicating a somewhat larger average mileage per car per year than heretofore.

AUTOMOBILE CASUALTIES

The death rate from automobile accidents has shown an alarming increase each year, ever since reliable statistics were first compiled. The rates per 100,000 population and per

100,000 cars registered has been as shown in the following table:

Year	Per 100,000 Population	Per 100,000 Registration
1920.....	10.4	119
1921.....	11.4	118
1922.....	12.4	112
1923.....	14.7	109
1924.....	15.4	100
1925.....	17.2	100
1926.....	17.8	95
1927.....	18.6*	96†

* State Reports.

† Estimated.

While the rate per unit of registration has seemed to tend downward,

the death rate per unit of population has increased and at a faster rate than the former decreased. This seems to indicate that the new recruits among drivers of motor cars are less competent than was formerly the case so that the need of licensing drivers is demonstrated. Opponents of this measure contend that the old drivers have become hardened and careless.

TRAFFIC PROBLEMS

Street congestion increased about in the same ratio as the registration. It was reported that the increasing difficulty of finding parking space was aiding the street railway traffic in several cities. This increase in congestion led to much study of the problem along exceedingly diversified lines.

Plans and Surveys.—Workers in the field of city and regional planning gave increased attention to traffic needs and many subdivisions were planned in such a way as to leave them undisturbed by through traffic. Many traffic surveys were made, including the cities of Bridgeport, Conn., White Plains, N. Y., San Francisco, Detroit and Boston. Providence received a comprehensive city and regional traffic and thoroughfare plan to guide its future undertakings. Hartford also secured a plan. In New Jersey, a state highway plan was presented to the legislature, based to a very great extent on fundamental traffic studies.

Control of Traffic.—The Annals of the American Academy of Political and Social Science devoted one of its numbers to Planning for City Traffic. Various schemes were published for controlling traffic; among them being such radical ideas as eliminating it almost completely from the central district and providing a ring street for circulation around such district. The Road Builders Association, the American Electric Railway Association and other groups made special studies with a view to promote Highway safety.

In New Jersey a state-wide conference was held on street and highway safety at which reports were submitted (among others) on Traffic

Control. The division of responsibility which now exists in most cities with reference to traffic matters was pointed out by a questionnaire published by *The American City*. Pittsburgh instituted a series of weekly reminders of traffic rules in the form of talks issued broadcast in leaflet form carrying lively cartoons. In Detroit a loud speaker was placed on a police auto so that the whole world would know what was being said by the police officer to a delinquent motorist or truck driver.

REGULATION

New York City put into force a new set of traffic regulations, the principal innovations in which were the giving of right-of-way to a pedestrian at a regular cross walk in the absence of a police officer or signal system, and the halting of all traffic within sight of a red stop-light at the first street crossing however far away the red light may be along such street. Akron, Ohio, promulgated a new code as did other cities.

Signs and Signals.—The American Engineering Council appointed a special committee of engineers to make an exhaustive, nation-wide survey looking to the standardization of traffic signs, signals and markings for cities. Secretary Hoover appointed a committee of experts to prepare a draft and suggest plans for reducing the existing confusion in street traffic regulations in cities. Meanwhile, state-wide adoption of unified ordinances has been almost completed in California, Michigan and Minnesota. The New York State annual conference of Mayors and other Municipal officials received a report from a joint committee on suggested uniform standards for traffic control signals.

The Pedestrian.—Special consideration was given to the pedestrian in a report by a committee of the National Highway Traffic Association, and the National Safety Congress heard papers on the subject. A scheme was proposed for the protection of pedestrians against right-turning motors by moving the end of the cross walk where the right turn takes place away from the curb cor-

ner approximately the length of one motor.

Increased playground space was advocated in many cities to keep children off the streets and reduce the present hazard. In addition to the making of studies, many items of a concrete nature were realized. Asheville, N. C., and Buncombe County started a 910-foot tunnel street to relieve congested traffic. Comprehensive roadway widenings were carried out in New York City, Detroit, and other cities so as to care for the increased flow.

Platoon System.—The platoon or progressive system of traffic light signals was adopted and put into operation or extended in a number of cities, including East Cleveland, Cleveland, Detroit and elsewhere. Lafayette, Ind., created a large free municipally-owned parking space for automobiles. Detouring of traffic around the congested district was carried out (among others) at Lafayette, Ind., Stamford and Bridgeport, Conn., Portchester, N. Y. Cleveland instituted a system of using three lanes on some streets for inbound traffic in the morning and one lane for outbound movement, and of using three for outbound traffic in the evening and one lane for inbound,—reversing the direction of travel on the two center lanes. Leominster, Mass., set aside a special street for the use of persons who are learning to drive autos. In Chicago, the boy scouts cleaned the street signs so that motorists would not be delayed in ascertaining their turnings.

Street Lighting.—Progress was made with reference to street lighting, especially concerning its effect on accident reduction. Questions of the proper illumination of traffic signs were given special consideration. A

special single lens (in each direction) three-color traffic control light signal was placed on the market which makes use of the railroad practice of a movable three-colored screen. Many other improvements and improved devices were advertised. A type of traffic sign employing transmitted light for the letters was advertised, while others made use of light reflected from motor headlights.

Cleaning Roads.—The Nevada State Highway Commission added another State to the number which clean their roads from nails, tacks and bits of iron and steel by the use of magnets carried on a truck. The Southern California Automobile Club operated a fleet of fifteen Dodge trucks which patrol the streets and highways and collect broken glass, 5,000 pounds being removed during one month.

Observance of Rules.—Among matters of more or less collateral interest, mention may be made of a few items. The psychology of obedience to traffic signals was discussed in the press. Michigan removed its maximum speed limit and substituted "a careful and prudent speed" instead. Six cities in New York State reported that the installation of automatic traffic signal systems reduced the number of traffic officers. Considerable discussion took place as to the advantages and disadvantages of the use of the amber light in traffic signalling.

Summary.—Traffic conditions are more and more occupying the attention of citizens, citizen bodies, and officials and, while little apparent progress was made during the year in reaching what is termed a solution, it is to be expected that the near future will see a better attitude toward traffic problems.

WATERWAYS AND HARBORS

BY WILLIAM N. TYLER

ASSOCIATE EDITOR, *Port and Terminal*

DEVELOPMENTS

The Government Program for river and harbor development for 1927 has been notable for both the completion

and beginning of many projects that will more closely link together both the great coastal cities and those located in the interior of the country.

The appropriations granted by the last congress will permit the deepening of many of the harbors that will allow ships of greater draught and consequently of greater tonnage to enter and discharge cargoes, giving them a greater degree of importance from a mercantile viewpoint.

Developments Completed have already been reflected in the added tonnage reported by the various chambers of commerce. Portland, Me.; Boston; the cities along Long Island Sound; Newark; New York; Philadelphia; Baltimore; Norfolk; Newport News; Charleston and other ports along the Atlantic Coast, where harbor improvements have been made, have all reported an increased marine traffic. The same is true of all of the gulf ports and those on the Pacific Coast and the Great Lakes.

Developments planned include the deepening and widening of numerous channels, opening up many ports for a new class of shipping. While the appropriations for this class of work were not all that could have been desired, yet they are sufficient to give a tremendous impetus to port development, and in many cases funds will be added from the State, municipality and private sources.

The intracoastal water development, while in its infancy, promises to be one of the greatest adjuncts to the commercial development of the country. It will open up a new field for various classes of marine transportation that hitherto has been unavailable, and reduce transportation costs to a marked degree. The hazards of the open sea will be eliminated and new terminal points created. This intracoastal project is a stupendous undertaking, and one which will require years of labor and the expenditure of millions to complete satisfactorily, but which will fully repay the expense.

CANALS, RIVERS AND LAKES

Canal projects have also effected great saving to many of the inland territories and reduced transportation charges. One of the most notable achievements of the year was the opening of the tidewater Chesapeake and Delaware Canal between Phila-

delphia and Baltimore. It had fully demonstrated its value and shows that an additional expenditure for the deepening and widening of this waterway is fully warranted. The New York Barge Canal, while permitting large shipments, is not meeting the requirements, owing to the lack of depth for the larger type vessels when loaded to their approximate capacity. The development of the Hudson in the vicinity of Albany bids fair to make that city an important shipping center.

The canal across New Jersey to Philadelphia is a possibility in the comparatively near future, as its need has been fully shown. Such a waterway will effect the saving of many millions to shippers in reduced transportation charges.

Ohio River Dam.—Another noteworthy achievement that is nearing completion is the damming of the Ohio River so that it will be navigable to boats of considerable capacity at all seasons of the year from Pittsburgh to Cairo. Locks and dams have been created nearly its entire length, and in a relatively short time, the dream of sending heavily loaded barges from Pittsburgh to New Orleans will be realized.

Railroad Cooperation.—There has been a decided movement on the part of the leading railroads of the country to cooperate with the inland waterway development, and the feeling is steadily growing stronger on the part of the roads that water transportation, instead of being detrimental to their interests, will prove beneficial by relieving them of a certain class of freight that hitherto has been unprofitable.

There has been a great development in both railroad water terminals in every section. The railroads have risen to meet the new problems confronting them, by increasing storage and handling facilities. Terminal warehouses have sprung up in every large city and there is every probability that buildings like the Bush Terminal in Brooklyn will soon be found in every important port.

Great Lakes.—The Great Lakes marine traffic has shown a steady growth, and several large steamship corpora-

tions have come into being. All the lake ports and railroad terminals report an increase in tonnage. New piers, built and projected and plans for an increased trackage predicate a future growth. The varied interests in this section feel confident that an adequate waterway to the Atlantic will be provided, either through the St. Lawrence or by the all-American route. Direct shippers to Europe prefer the former while those whose trade is with southern ports advocate the latter. Many want both.

ATLANTIC PORTS

Boston has advanced considerably in importance as an Atlantic Coast port in the past year, and the reports issued by its Chamber of Commerce show a constantly increasing tonnage, much being routed to the port from western points. Its great dry-docks have also been a factor in inviting marine commerce. Its railroad terminal facilities are being greatly improved and will provide for the cheaper handling of goods in transit.

Fall River.—There has been a slight improvement in business in the ports on Long Island Sound, and Fall River is making a strong effort to have its harbor deepened and widened to care for 10,000-ton vessels. New wharf facilities have been provided.

Newark.—Eminent among the great developments, and one that has made a great stride in past years is the Harbor of Newark, N. J. Due to its being one of the great railroad terminals of the East, with plenty of cheap available waterfront, it has rapidly advanced from almost the zero mark until it is rated as a port of the first class. Its manufacturing industries are constantly increasing and feed a large proportion of its water-borne and railroad commerce.

Philadelphia.—The reports from Philadelphia show a steady growth in its importance as a port and railroad terminal, and the receipts and shipments of both water-borne and railroad freight have shown a steady increase. There have been a number of important port developments, including several fine piers and additional railroad terminal trackage. The

opening of the new Chesapeake and Delaware Canal has proved beneficial and when it is enlarged to accommodate ocean going vessels, its value will be more apparent.

The Hampton Roads district, which includes Norfolk, has been making a strong bid for marine commerce of all kinds and the railroads have been strengthening their terminal facilities. Plans are under way for harbor developments that would make it one of the most ideal ports on the coast.

Baltimore has shown a marked development, and has secured many ocean lines as a terminal port. Work is now in progress and projects to widen and deepen several of its channels, and new railroad terminal facilities are being developed. This city has considerably benefited by this new Chesapeake and Delaware Canal. Figures show it ranks second to New York in foreign trade and third in its intercoastal traffic, New York and Philadelphia leading.

Charleston.—No port on the Atlantic coast has shown a higher percentage in the increase of its tonnage than Charleston, S. C., according to the latest reports. In the past four years it has risen from thirty-fourth to fifteenth place in the American ports. In 1926 it showed a 277½% in value over 1921 for its foreign trade and 236% in intercoastal trade over 1927. The sailings have doubled those of the preceding year. Extended port facilities are being projected to care for the commerce that Charleston feels sure will follow in the next few years.

GULF PORTS

Florida.—Of the various Florida ports, Tampa and Pensacola are the leaders, and the bulk of the business transacted in each has been of coast-wise nature. The latter city claims to be the most available harbor of the Gulf and shows a remarkable gain in its terminal facilities.

Mobile has been making great strides, and the government-operated warrior line has greatly benefited its commerce. Many harbor improvements have been made and projected and its facilities somewhat improved.

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Its foreign shipments show a gain, and its local boards are calling the attention of shippers along the Mississippi Valley to its fine terminal facilities.

New Orleans, notwithstanding the floods during the past year, has maintained its supremacy as the great shipping center of the South. The flood at no time interfered with docking and loading of either coastwise or foreign vessels and caused but little delay in river freight which constitutes a large percentage of the commerce of that city. From its advantageous position, it will easily remain in its commanding position, and with the opening of the proposed intra-coastal canals and railroad terminals will show decided gains.

Beaumont.—Among the newer port developments in Texas is Beaumont which has recently shipped its first bale of cotton, since followed by several large cargoes. This has given the city a great impetus as a shipping center for many native commodities. The railroads entering Beaumont are preparing to extend their terminals and the Chamber of Commerce sees Beaumont taking its place among the ranking ports of the South. The channels and harbor have been deepened and widened to care for ocean-going ships and tankers, and several new piers have been constructed.

The Port of Galveston shows steady gains in both foreign and coastwise trade, and many terminal improvements have been added. It ranks as the leading port of Texas, and when connected with the smaller ports by the projected intracoastal canal, will show even a more rapid development. Its railroad facilities show improvement and the terminals have been enlarged and extended to meet the shipping requirements.

MISSISSIPPI RIVER PORTS

All of the river cities on the Mississippi and its tributaries have shown gains in shipping, and many new barges have been placed in service. The growth of its commerce will be greatly accelerated by the deepening of the channels, building of dams and similar improvements. The floods

of the past year did not greatly interfere with the commerce of its leading cities. New and improved rail and boat terminal facilities have been devised and added to its leading ports, making it possible in many cases to load boats direct from cars at any stage of the water with the same facility as tidewater loading.

PACIFIC PORTS

Los Angeles, although not a natural harbor, has been brought to a high point of development, and its commerce during the past year has increased to such a point as to entitle it to a leading place among the Pacific Coast Ports.

San Francisco is and probably always will be the chief of the Pacific ports. Its water-borne commerce, combined with new rail terminal facilities has kept pace with the growth of the city, and the trade reports show a marked increase in the foreign and domestic tonnage received and cleared. Its present waterfront is valued at over \$50,000,000.

Alameda, located on San Francisco bay, has shown a remarkable development, and new piers and railroad terminals, costing approximately \$10,000,000, are being built by the city. The Alameda Belt Line Railway, built by the city, is now jointly operated by the transcontinental railways reaching the district. Every effort is being made, on account of the facilities offered, to make this the great industrial site for this part of California.

Astoria has come prominently to the front during the past year, and its oriental and lumber shipments have shown a decided growth. At the mouth of the Columbia River, its site is ideal, and the increasing rail facilities will augment its commerce in the future. New piers have been added to its waterfront and extensive dredging has been carried out.

Seattle has added considerably to its waterfront facilities, purchasing a large site the early part of the year from the U. S. Shipping Board comprising an area of 26 acres, for development into an intercoastal terminal. Efforts are being made to make this port attractive to indus-

WATER SUPPLY

tries. Its Port Commissioners report an increase in tonnage, both incoming and outgoing.

Tacoma also shows a steady growth as a port and is developing all of its facilities in order to keep pace with Seattle. These two cities will control the bulk of the marine commerce of the far northwest and

will in time dominate the Puget Sound trade. All of the smaller ports along the Pacific Coast, many of which are of comparatively recent origin, are proving their usefulness and are building up a considerable commerce which will increase with the development of the adjacent territory and added rail terminals.

WATER SUPPLY

BY H. BURDETT CLEVELAND

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POLICY

In the field of water supply, as respecting company management and ownership, there has been a partial but important reversal of policy, especially evidenced during the past year. As compared to the situation one or two years ago, when water supply companies were ready in many instances to sell their systems to municipalities, recently several large water works holding corporations, some newly formed and some long established, have been building up large holdings by purchasing a network of individual and affiliated water supply systems, principally throughout the east, south and southwest, nearly all of these being purchased from private companies.

Recently the Public Service Commission of Pennsylvania refused to approve the financing plans for the purchase of four physically separated water companies by a central company on the ground that approval of the plan would put an obstacle in the way of municipal purchase of privately owned water works, which it is the policy of the state to encourage.

The tendency in the municipally owned water supply field is also along the line of cooperation and centralized control. Legislation is being enacted or proposed and projects are being carried out in many states for joint water supply districts.

NEW PLANTS AND PROJECTS

Many new water supply systems have been under construction or com-

pleted during the past year and several enlargements of systems or of filtration plants have been completed or projected.

Delaware River.—The most important contemplated extension of water supply source is the proposed use of the Delaware River and its tributaries by New York City. The additional yield desired from this source is 600 million gallons daily with a daily yield of 510 to 540 million gallons possible under the first two stages of development at an estimated cost of \$272,587,000. This plan, it is estimated, will give 15 per cent more yield at \$75,347,000 less cost than the plan for developing sources along the east side of the Hudson River, advanced in 1926.

It is proposed to store flood flows, only, which would improve rather than impair the dry weather flow in the river. The plan has been brought out by the Board of Water Supply following the failure to date of a tri-state agreement between New York, Pennsylvania and New Jersey.

Denver and Washington.—On February 18, 1927, the pioneer bore of the Moffat tunnel was holed through, this undertaking, as a secondary but important feature, increasing the available water supply for Denver. In June, a new filtration plant at Washington, D. C., was put in operation, the old plant having been rebuilt for use as a reserve unit. The new filtration plant will have a capacity of 100 million gallons daily.

Other Projects.—A 360-million-gallon daily capacity intake tunnel un-

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der Lake Ontario together with a filter and a new pumping station are proposed at Toronto, the estimated cost being about \$14,000,000. At Rochester, N. Y., the City Council has approved the development of Honeoye Lake as an additional source of water supply at an initial cost of \$12,000,000 and an ultimate cost of \$22,000,000, this source having been recommended by a board of consulting engineers in preference to Lake Ontario. At New Orleans an addition to the filter, increasing the capacity by 72 million gallons daily, is being completed. At Baltimore \$10,000,000 has been appropriated for water supply extensions. A second pressure tunnel is to be constructed in New York City from Hill View reservoir to Brooklyn.

PURIFICATION

Methods.—The most important recent developments in purification processes consist in provisions for preliminary mechanical removal of silt from turbid waters before coagulation and filtration, as at Kansas City, Mo., St. Louis, and Lancaster, Pa., in a wider application of methods for aerating treated waters to reduce tastes and odors and to remove iron and in a more intensive study of color removal, principally by coagulation with sodium aluminate in combination with the usual coagulating

reagent, aluminum sulphate, or alum. This latter development in process will apparently, with most waters and especially with highly colored waters, decrease the cost of filtration materially. Other changes in process consist of an increasing adoption of split or double coagulation and chlorination and chlorination preceding aeration in the case of hydrogen sulphide waters.

Refinement in strainer or under-drain systems for filters is being given close attention, since washing troubles at filter plants are hardest to overcome. Considerable advance has been made in processes and operation at water softening plants, principally in devices for handling chemicals and for mixing, in clarification before chemical treatment, in studies of the use of different chemicals, and in recarbonizing lime-softened water.

Typhoid Fever Reduction.—Again, as during the past 10 to 15 years, the typhoid fever death rate has shown a decrease during the past year. While much of this more recent decrease has been dependent on other than water supply improvements, efficient filtration and chlorination of public water supplies has, beyond all doubt, been the most important factor in preventing a recurrence of the abnormally high rates of twenty years ago.

ELECTRIC LIGHTING AND POWER

BY DELOS F. WILCOX

PUBLIC UTILITY EXPERT, GRAND RAPIDS

GENERAL PROGRESS

The year 1927 was a period of more or less confused and halting progress along the sane lines that have marked the development of this utility in recent years. In spite of a widespread slowing down of industrial processes during a large part of the year, the total amount of electrical energy generated and sold continued to increase. Gross earnings for the twelve months ended June 30, 1927, were \$1,595,000,000, and the month of July, 1927, showed suffi-

cient increase over July of the preceding year to push the annual total above the \$1,600,000,000 mark. The consumption of electrical energy for lighting purposes increases much less rapidly than the consumption for power purposes, and the proportion of the total revenues of the utility derived from lighting customers is decreasing. However, on account of the relatively high rates charged for lighting, about two-thirds of the total revenues are derived from this branch of the business, although

ELECTRIC LIGHTING AND POWER

barely one-fourth of the energy sold is used for lighting purposes.

ENERGY CONSUMPTION

Distribution.—The total consumption of electrical energy by customers

of the utility, with the distribution among lighting, power, and electrical railway uses, as estimated by the *Electrical World*, by months from July, 1926, to September, 1927, inclusive, is as follows:

ESTIMATED DISTRIBUTION OF ENERGY CONSUMPTION

Month and Year	Total Consumption by Customers (Thousands of K.W.H.)	For Lighting (Thousands of K.W.H.)	For Power (Thousands of K.W.H.)	For Street Railways (Thousands of K.W.H.)	Per Cent for Lighting
1926					
July	4,489,172	1,164,000	2,761,172	564,000	25.9
August	4,662,753	1,212,000	2,886,753	564,000	26.0
September	4,700,852	1,188,000	2,966,852	546,000	25.2
October	4,981,959	1,262,000	3,149,959	570,000	25.3
November	4,933,784	1,310,000	3,073,784	550,000	26.5
December	5,195,500	1,400,000	3,195,500	600,000	26.9
1927					
January	5,183,199	1,450,000	3,110,199	623,000	28.0
February	4,696,468	1,210,000	2,928,468	558,000	25.7
March	5,194,272	1,305,000	3,304,272	585,000	25.1
April	4,979,656	1,235,000	3,194,656	550,000	24.8
May	5,123,471	1,252,000	3,329,471	542,000	24.4
June	5,043,247	1,205,000	3,310,247	528,000	23.8
Total, 12 months to June 30, 1927...	59,184,333	15,193,000	37,211,333	6,780,000	25.7
July	5,028,472	1,242,000	3,262,472	524,000	24.7
August	5,196,191	1,265,000	3,404,191	507,000	24.3
September	5,121,002	1,274,000	3,336,002	511,000	24.9

LIGHTING REVENUE

The average rates for lighting seem to be decreasing. The energy consumed for lighting during the three months July, August, and September, 1927, was 5.7 per cent greater than for the corresponding months of 1926, table:

while the revenues derived therefrom were 1.1 per cent smaller. The gross revenues of the utility for 15 months derived from lighting, power, and street railway consumers, respectively, are set out in the following table:

DISTRIBUTION OF GROSS REVENUES FROM SALE OF ELECTRICAL ENERGY

Month	Total (Thousands)	From Lighting Customers (Thousands)	From Power Customers (Thousands)	From Electric Railways (Thousands)	Per Cent from Lighting Customers
1926					
July	\$ 119,000	\$ 81,100	\$ 33,400	\$ 4,500	68.2
August	119,200	81,300	33,600	4,300	68.2
September	122,650	82,600	35,600	4,450	67.3
October	131,400	88,400	38,400	4,600	67.3
November	137,300	90,500	41,900	4,900	65.9
December	144,100	95,200	43,500	5,400	66.1
1927					
January	151,000	102,000	43,200	5,800	67.5
February	141,600	94,100	42,100	5,400	66.5
March	135,300	88,100	41,900	5,300	65.1
April	135,200	86,700	43,400	5,100	64.1
May	130,200	83,100	42,300	4,800	63.8
June	128,200	81,500	42,000	4,700	63.6
Total, 12 months to June 30, 1927...	\$1,595,150	\$1,054,600	\$481,300	\$59,250	66.1
July	\$ 124,100	\$ 77,700	\$ 41,900	\$ 4,500	62.6
August	125,700	79,900	41,400	4,400	63.6
September	134,000	84,700	44,700	4,600	63.2

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ENERGY GENERATED

The total energy generated during the 12 months ended June 30, 1927, was approximately 72½ billion K.W. H., but the energy sold to customers was only a little over 59 billions. Thus the proportion of generated energy lost in transmission and used in intra-company business was approximately 18.6 per cent. The proportion of the energy generated in hydro-plants to the total energy generated was about 37.9 per cent. This shows very little change from pre-

vious recent years, but the first half of 1927 shows hydro 40 per cent, while in the second half of 1926 hydro was less than 36 per cent. This relative increase in hydro may be due to increased rainfall. It is not anticipated that the hydro percentage will increase to any great extent in the near future. The total amount of energy generated by the central station plants, with the distribution between hydro and fuel-power plants, is shown by the following tabulation:

ENERGY GENERATED BY CENTRAL STATION PLANTS

Year and Month	Total K.W.H. (Thousands)	By Hydro- Plants (Thousands)	By Fuel Power Plants (Thousands)	Per Cent Hydro
1926				
July	5,562,172	1,971,199	3,590,973	35.4
August	5,777,753	2,062,629	3,715,124	35.7
September	5,825,852	2,033,312	3,792,540	34.9
October	6,174,959	2,122,236	4,052,623	34.4
November	6,063,784	2,193,093	3,870,691	36.2
December	6,377,500	2,377,175	3,998,325	37.3
1927				
January	6,303,199	2,331,140	3,972,059	37.0
February	5,706,468	2,172,740	3,533,728	38.1
March	6,314,272	2,551,792	3,762,480	40.4
April	6,049,656	2,526,938	3,522,718	41.8
May	6,218,471	2,625,427	3,593,044	42.2
June	6,127,247	2,491,840	3,635,407	40.7
Total, 12 months to June 30, 1927	72,499,333	27,459,621	45,039,712	37.9
July	6,109,472	2,401,852	3,707,620	39.3
August	6,312,191	2,378,924	3,933,267	37.7
September	6,222,002	2,195,325	4,030,677	35.3

RATE REGULATION

Worcester Case.—In the field of regulation the most important development of the year was in connection with the regulation of the rates of the Worcester Electric Light Company by the Massachusetts Department of Public Utilities. In this case the Department reiterated its adherence to the so-called Massachusetts rule by which honest and prudent investment is taken as the rate base, and rejected the so-called Federal rule by which reproduction cost less depreciation is given dominant weight in valuation for rate purposes. The Department ordered the company to reduce its maximum rate from seven cents to five cents per kilowatt-hour. Two of the commissioners favored a reduction to four and one-

half cents. The company took the matter into the Federal Court and got a temporary injunction on the theory that the income allowed by the Department's order would yield less than a fair return upon the "value" of the property as determined by the Federal rule. It was expected that the issue would be carried to the United States Supreme Court.

This case is of the greatest importance for the reason that heretofore no case involving the Massachusetts rule has ever been taken to the Supreme Court from New England, and the ruling in this case may be finally determinative of the question whether the Federal Courts will permit any commonwealth to develop and enforce a consistent policy of regulation based upon investment.

ELECTRIC LIGHTING AND POWER

The Massachusetts Department considered the matter of sufficient importance to warrant a recommendation of new legislation designed to put regulation on a contractual basis and foreclose the companies from appealing to the Federal courts in rate cases.

INVESTIGATION OF POWER COMPANIES

Senate Resolution.—In February the United States Senate adopted a resolution calling upon the Federal Trade Commission to investigate the organization, control and ownership of commercial electric power companies. At the time, it was alleged in the Senate that the General Electric Company had acquired and was exercising power over the electrical industry tending to monopoly. The commission's report called attention to the voluntary act of the General Electric Company in 1924 in divorcing itself as a corporation from the Electric Bond & Share Company, through which it had previously exercised most of its financial and operating control over subsidiary companies.

Federal Trade Report.—With respect to the extent of such control prior to this formal divorcement, the commission said:

"Reports regarding the principal statistical facts of interest were obtained from operating companies producing in 1924 over 95 per cent of the electrical energy generated in the United States. Of this total the General Electric interests had 12.5 per cent of the installed capacity, 11.8 per cent of the electrical energy generated, and 9.6 per cent of the number of customers. While no other single interests equaled these percentages of the total industry, two of the largest groups (North American and Insull) were not very far behind, and the various large holding companies taken together had several times the importance of the total General Electric interests. Moreover, the isolated companies in the aggregate were almost as large as the General Electric group."

General Electric.—After discussing the origin of the General Electric Company's policy in developing the

Electric Bond & Share Company as an instrumentality of control, the report continued: "But while the General Electric Company, through the Electric Bond & Share Company, was thus building up an extensive organization of electric power companies, the field was so large that there were abundant opportunities for any other group with sufficient financial backing and expert knowledge to do likewise. Indeed, the firm of Stone & Webster in many important respects was the pioneer in this activity, rather than the Electric Bond & Share Company. At any rate, there has developed in fact, as already indicated a number of other important electric power groups which in 1924 far exceeded in the aggregate the General Electric group. Among these may be mentioned the 'Insull interests,' the North American Company, the Stone & Webster group, already referred to, the Standard Gas & Electric (Byllesby) group, the Cities Service (Doherty) group, the Commonwealth Power group, etc.

"Pyramiding."—"One of the problems of public interest concerning some of the large electric power groups is the extreme degree to which 'pyramiding' has been carried in superposing a series of holding companies over the underlying operating companies, so that in one instance less than a million-dollar investment in the majority of the voting stock of the apex holding company gave, in 1925, full control of the entire organization of the group, having scores of underlying companies and several hundred million dollars of investment. Such pyramiding not only affects the financial stability of the electric power industry, but also has a potential relation to the more general question of undue concentration of control in the electric power industry. As the extensive grouping of electric power companies often brings their business into the field of interstate commerce, it presents a problem that calls for legislative consideration by Congress."

Pinchot Charges.—In December Gifford Pinchot, former governor of Pennsylvania, under whose administration the so-called Giant Power Sur-

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vey was made, addressed an open letter to Senator Thos. J. Walsh of Montana, in which he alleged the following: "Forty-one corporations control four-fifths of all the electrical energy produced in the United States. Out of the 68,732,000,000 kw.-hr. of electricity produced in 1926, these forty-one corporations produced 54,713,000,000.

"These forty-one corporations have a total capitalization of ten thousand two hundred million dollars. They monopolize all the sources of electric power for four-fifths of our people. Eighty-five million seven hundred thousand Americans must get electricity from these forty-one corporations or go without.

"Of these forty-one corporations twenty-nine, or about three-quarters, are already known to be dominated, owned or controlled by five men or corporations and their associates. These five dominant electrical interests are the General Electric Company of New York, Doherty of New York, Morgan of New York, Ryan of New York, and Insull of Chicago. It is altogether probable that most, if not all, of the remaining twelve also will be found to be dominated, owned, or controlled in the same way. But if the five major interests do in fact control only the twenty-nine corporations, still their assets are capitalized at six thousand million dollars (\$5,990,000,000), and they produced in 1926 more than half of all the electricity used in the United States.

"The five controlling interests are allied, but not so far as we know actually under any single head. But they are tied together, first, by their common interest in maintaining their present power to collect extortionate rates from their customers. The combined electric lobby now in Washington, which represents them all, is proof enough of that. Secondly, they are tied together by common ownership in certain companies, by common investment interests, by common directors and doubtless in many ways which are not yet disclosed."

Walsh Resolution.—Shortly after the assembling of Congress Senator Walsh offered a resolution in the

United States Senate calling for the appointment of a special committee of five senators to conduct an investigation of the electric and gas industries. This resolution was referred to the committee on interstate commerce. The scope of the proposed inquiry, specifically, includes the following:

"(1) The growth of the capital assets and capital liabilities of public utility corporations supplying either electrical energy in the form of power or light, or both, however produced, or gas, natural or artificial, of corporations holding the stocks of such public utility corporations, and of non-public-utility corporations owned or controlled by or affiliated with such holding companies;

"(2) The method of issuing, the price realized, or value received, the commissions or bonuses paid or received, and other pertinent facts with respect to the various security issues of all classes of corporations herein named, including the bonds and other evidences of indebtedness thereof, as well as the stocks of the same;

"(3) The extent to which holding companies or their stockholders control or are financially interested in financial, engineering, construction, and/or management corporations, and the relation, one to the other, of the classes of corporations last named, the holding companies and the public utility corporations;

"(4) The services furnished to public utility corporations by holding companies and/or their associated, affiliated and/or subsidiary companies, the fees, commissions, bonuses or other charges made therefor, and the earnings and expenses of such holding companies and their associated, affiliated and/or subsidiary companies;

"(5) The value or detriment to the public of holding companies owning the stock or otherwise controlling such public utility corporations immediately or remotely, with the extent of such ownership or control, and particularly what legislation, if any, should be enacted by Congress to correct any abuses that may exist in the organization or operation of such holding companies."

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The resolution also calls for an inquiry into political contributions, or, in the words of the resolution, the extent to which these utilities, "through the expenditure of money or through the control of the avenues of publicity, have made any, and what, effort to influence or control public opinion on account of municipal or public ownership of the means by which power is developed and electrical energy is generated and distributed, or to influence and control elections."

MISCELLANEOUS DEVELOPMENTS

Plant Extensions.—During the year the controversy over the final disposition of Muscle Shoals was comparatively dormant, though still undetermined, while public attention was chiefly centered on proposed legislation for the construction of the Boulder Dam in the Colorado River. The Detroit Public Lighting Commission opened a fine new power plant during the year, and prepared to take over the load of the Detroit Municipal Railways. The Cleveland municipal plant was rehabilitated and enlarged, and plans for the further development of Seattle's municipal power projects were adopted. In California valuation proceedings were carried on before the Railroad Commission looking to the acqui-

sition by the city of San Francisco of the local distribution system of the Pacific Gas & Electric Company, but in Los Angeles on popular vote the proposal of the Bureau of Light & Power to acquire the local distribution system of the Los Angeles Gas & Electric Corporation was defeated, largely on the score that the public was already getting low rates and efficiency through competition between the municipal plant and the company's plant."

Consolidation.—The general movement toward consolidation through the acquisition of small plants by large companies continued during the year. The willingness of the electric light and power interests to pay high prices for municipal plants was subject to considerable criticism, notably by the Maryland Public Service Commission. On the other hand, Samuel Insull, in an address before the Electric Association in Chicago, outlined the development of interconnection and consolidation of plants in Illinois, and defended the practice of paying for small isolated plants more than they are worth, his theory being that the economies of consolidation and joint management more than offset the disadvantages of high capital cost, besides adding very greatly to the amount of public service rendered.

COGNATE SOCIETIES

AMERICAN WATER WORKS ASSOCIATION.—170 Broadway, New York, N. Y.

INTERNATIONAL ASSOCIATION OF FIRE CHIEFS.—225 W. 34th St., New York, N. Y.

NATIONAL PARKS ASSOCIATION.—1512 H. St., N. W., Washington, D. C.

NATIONAL PUBLIC SERVICE ASSOCIATION.—87 Nassau St., New York, N. Y.

PARKS AND PLAYGROUNDS ASSOCIATION OF NEW YORK.—1123 Broadway, New York, N. Y.

DIVISION VIII

PUBLIC FINANCE AND TAXATION

NATIONAL FINANCIAL REVENUES AND EXPENDITURES

By MERLIN H. HUNTER

PROFESSOR, UNIVERSITY OF ILLINOIS

FEDERAL EXPENDITURES

Trend.—Much attention has been given to the reduction of Federal expenditures since their peak shortly after the close of the World War. Many reductions were expected, but those who have had any notion that there is a chance of reaching a pre-war expenditure are doomed to disappointment. Some expenditures will, of course, continue to decrease. As more of the Federal indebtedness is liquidated, the expenditure for interest will become less; but at the same time, because of the need arising from an increasing population, many civil expenditures will expand. For three or four years the aim of many Federal fiscal officials has been to operate on a \$3,000,000,000 budget. As yet no such hope has been realized, and

it seems we have about reached a stationary point in the neighborhood of \$3,500,000,000.

An analysis of the nature of the expenditures shows that about \$2,000,000,000 of this can be attributed to such items as handling the war finances and taking care of disabled soldiers. When the expenditure for the army and navy are added, a comparatively small percentage of the total is left for strictly civil purposes. There is no better way to gain, at a glance, an idea of the Federal expenditures than to show them in a statistical form. The various statistical tables which follow are taken from the sixth annual report of the Director of the Bureau of the Budget made to the President July 1, 1927.

ESTIMATES, APPROPRIATIONS, RECEIPTS, AND EXPENDITURES (TO JUNE 30, 1927)

(Exclusive of postal revenue and expenditures therefrom.)

Estimates of appropriations:	
Budget for 1927 (including revised public debt estimates).....	\$3,200,528,765.06
Supplemental estimates	258,517,654.09
Total estimates	\$3,459,046,419.15
Appropriations made	3,454,331,363.98
Appropriations less than estimates.....	4,715,055.17
Ordinary receipts during fiscal year 1927:	
Estimated in 1927 Budget.....	3,824,530,203.00
Estimated June 30, 1926.....	3,779,769,000.00
Estimated in 1928 Budget.....	4,026,780,688.00
Actual (daily Treasury statement June 30, 1927).....	4,129,394,441.10
Expenditures during fiscal year 1927, payable from ordinary receipts, including postal deficiency:	
Estimated in 1927 Budget.....	3,494,222,308.44
Estimated June 30, 1926.....	3,593,472,000.00
Estimated in 1928 Budget.....	3,643,701,593.00
Actual (daily Treasury statement June 30, 1927).....	3,493,584,519.40
Surplus for fiscal year 1927:	
Estimated in 1927 Budget.....	330,307,894.56
Estimated June 30, 1926.....	186,297,000.00
Estimated in 1928 Budget.....	383,079,695.00
Actual (daily Treasury statement June 30, 1927).....	635,809,921.70

NATIONAL FINANCIAL REVENUES AND EXPENDITURES

REVISED ESTIMATES OF RECEIPTS, FISCAL YEAR 1928 (TO JUNE 30, 1928)

Customs	\$ 587,000,000.00
Internal revenue:	
Income and profits tax.....	2,150,000,000.00
Miscellaneous internal revenue.....	585,000,000.00
Miscellaneous receipts:	
Legislative establishment	698,160.00
Independent offices—	
United States Veterans' Bureau.....	67,469,355.00
Housing Corporation	2,061,000.00
Federal Reserve Board.....	2,500,000.00
Other independent offices.....	562,380.00
Department of Agriculture.....	8,533,175.00
Department of Commerce.....	4,545,150.00
Interior Department—	
Civil	16,247,804.00
Indians	22,030,000.00
Department of Justice.....	9,886,200.00
Department of Labor	4,898,100.00
Navy Department	4,806,550.00
State Department	9,292,959.00
Treasury Department	231,750,108.00
War Department	34,153,686.00
Panama Canal	25,050,000.00
District of Columbia.....	31,145,000.00
Capital income and special operations—	
Railroad Administration	121,473,972.00
Merchant Fleet Corporation	1,349,561.00
Total receipts	\$3,920,544,160.00

ANALYSIS OF STATISTICS

Details.—In an analysis of the statistics, Director Lord calls attention to such items as the following: The total ordinary receipts for the fiscal year ending June 30, 1927, were \$4,129,394,000 as compared with \$3,962,755,000 for 1926, due to net increases of \$26,070,000 in customs receipts, \$31,775,000 in internal revenue receipts, \$11,851,000 in foreign debt repayments, \$53,003,000 in sales of railroad securities, \$29,906,000 in sales of Federal Farm Loan bonds and other securities, \$15,033,000 in other receipts.

The total of ordinary expenditures, excluding expenditures for the postal service, was \$3,493,585,000 as compared with \$3,584,988,000 for 1926, or a net decrease of \$91,403,000. This was because of decreases of \$12,243,000 in postal deficiency, \$44,918,000 in interest on public debt, \$72,232,000 in customs and internal revenue refunds, \$11,241,000 in civil-service retirement fund investments, and \$23,105,000 in miscellaneous items. These decreases are in part offset, however, by an increase of \$31,132,000 in general expenditures, \$9,026,000 in government life insurance fund investments, and \$32,179,000 in public debt retirements.

Practice of Economy.—During the past year a great deal of emphasis has continued to be placed upon economy in handling funds. One method by which this was shown was the emphasis placed upon having every public officer avail himself of the privilege of taking discounts, whenever possible, on all government purchases. From this practice savings of more than \$1,000,000 resulted for the year, which brought the total savings since the policy of taking discounts was adopted to more than \$4,293,000. This policy has been beneficial, furthermore, in that the government is a more desirable customer because of prompt payments, and consequently secures the advantages of lower prices.

BUSINESS ORGANIZATION OF THE GOVERNMENT

Official Meeting.—The business organization of the government is composed of the principal administrative officials. The thirteenth regular meeting of this organization was held in Memorial Continental Hall on June 10, 1927. It has been the custom to broadcast the proceedings of these meetings. After a musical program by the United States Army Band, the meeting was addressed by the Presi-

VIII. PUBLIC FINANCE AND TAXATION

REVISED ESTIMATES OF EXPENDITURES, FISCAL YEAR 1923 (TO JUNE 30, 1928)

Ordinary expenditures for operation of the routine business of the Government:

Legislative establishment	\$ 16,165,331.00
Executive Office	588,460.00
United States Veterans' Bureau.....	400,000,000.00
Federal Board for Vocational Education.....	7,700,000.00
Other independent offices	30,221,910.00
Department of Agriculture, exclusive of good roads.....	70,000,000.00
Department of Commerce.....	33,000,000.00
Interior Department proper.....	31,724,570.00
Indian Service	34,650,911.00
Department of Justice	28,000,000.00
Department of Labor.....	9,400,000.00
Navy Department	349,000,000.00
State Department	12,600,000.00
Treasury Department	150,500,000.00
War Department—	
Military and departmental	288,051,237.00
Nonmilitary	101,948,763.00
Panama Canal	9,000,000.00
District of Columbia	39,200,000.00
Deficiencies in postal revenues.....	23,000,000.00
Good roads	80,000,000.00
Pensions	222,124,519.00
Claims, judgments, etc.....	5,573,254.00
Total ordinary routine expenditures.....	\$1,942,448,955.00
Refunds of receipts, customs, and internal revenue.....	176,240,500.00
Capital outlays and operations in special accounts:	
Shipping Board and Merchant Fleet Corporation.....	19,840,000.00
War Finance Corporation.....	¹ 1,600,000.00
Railroads	3,300,000.00
Alien property funds.....	1,150,000.00
Reduction in principal of the public debt, required to be made from ordinary receipts:	
Sinking fund	\$ 353,850,942.00
Redemption of securities from Federal reserve and intermediate credit bank franchise tax receipts.....	1,000,000.00
Payments of foreign governments received in United States securities	298,617,800.00
Total reduction in public debt from ordinary receipts.....	563,468,742.00
Adjusted service certificate fund.....	111,700,000.00
Investment of trust funds:	
Government life insurance fund.....	47,250,000.00
Civil Service retirement fund.....	1,250,000.00
District of Columbia teachers' retirement fund.....	465,000.00
Other	101,732.00
Interest on the public debt.....	720,000,000.00
Total expenditures, including interest and principal of public debt and investments of trust funds.....	\$3,582,814,929.00

¹ Excess of credits—deduct.

dent of the United States and the Director of the Budget.

The President characterized the meeting as of national importance since it was here that the officials made a report of their stewardship to the people. He stressed what they had been able to accomplish within the past few years because of the practice of economy and contended that the greatest safeguard of the nation, financially, socially, and morally, lies in constructive economy in

government and that the Federal Government has set an example, not alone to other governments in this country, but to other nations in the practice of economy.

Statement of President.—The President was gratified with the prospect of some \$599,000,000, but thought this of little value as a guide for the future since the receipts for the year contained items which would not again recur. The only hope for tax reduction was to hold expenditures

down, and the application of the surplus to a reduction in the debt would be an aid in this direction by lessening the amount to be expended for interest. He concluded his remark by saying, "There must be no relaxation of effort. Wiser from the year just closing, we should the more intelligently attack the problem facing us the coming year, and more scientifically appraise our needs for the year following. To do more work and better work with a smaller outlay of the taxpayers' money is the supreme test of successful administration."

The Director of the Budget pointed out many of the economies which had been effected, and paid tribute to those administrations which had given such helpful cooperation. He stressed the fact that no let-up was contemplated in the effort to make everything correct for economy, and that the happy condition in which we now find ourselves was no warrant for discontinuance of the war against waste, no reason for relaxing our effort for better administration, and no excuse for failure to preserve and hold what we have gained.

REVENUE ACT

Expressions of Dissatisfaction.—The present revenue system of the Federal Government is that formulated in the Revenue Act signed by the President on February 26, 1926. The rates are, of course, much higher upon the same objects that were taxed before the war, and the number of objects taxed is still greater. Many expressing the interests of the states have felt that the Federal Government has encroached upon the rights of the states. Some have decreed in no uncertain terms the extreme complexity of the Revenue Act. Some have urged reductions in some of the rates while others have advocated reductions elsewhere. With the impending session of Congress and with it the possibility for change, the objections have taken on a more formidable aspect and have resulted in many formal proposals for changes.

Joint Committee on Internal Revenue.—By authorization of the Revenue Act of 1926 there has been estab-

lished the Joint Congressional Committee on Internal Revenue Taxation. This is composed of ten members equally divided between the Senate Finance Committee and the Ways and Means Committee of the House. William R. Green is chairman of the committee and the other members are Representative Hawley of Oregon; as Vice-Chairman; Senator Smoot, of Utah; Senator Watson of Indiana; Senator Reed of Pennsylvania; Senator Simmons of North Carolina; Senator Jones of New Mexico; and Representatives Treadway of Massachusetts; Garner of Texas; and Collier of Mississippi.

The chief duties of the committee as set forth in the Revenue Act are as follows:

1. To investigate the operation and effect of the Federal system of internal-revenue taxes.
2. To investigate the administration of such taxes by the Bureau of Internal Revenue or any executive department, establishment, or agency, charged with their administration.
3. To make such other investigations in respect of such systems of taxes as the joint Committee may deem necessary.
4. To investigate measures and methods for the simplification of such taxes, and particularly the income tax.
5. To publish proposed measures and methods from time to time for public examination and analysis, and to make appropriate reports of its activities.

NATIONAL COUNCIL OF STATE LEGISLATURES

As an outgrowth of the extension of federal authority, an organization known as the National Council of State Legislatures has been formed. At the first meeting, September 10, 1927, the chairman said:

"We are about to engage in setting up and perpetuating a new agency of government. We have witnessed with growing concern the swift centralization, especially during and since the World War, of governmental powers at Washington. We have seen the rapid growth of Federal authority and bureaucracy. With increasing uneasiness, we have beheld the ex-

tension of Federal control, supervision and meddling into fields remote from the base of national jurisdiction until today Federal power, Federal authority, Federal government have encroached so far upon the rights of our state and local governments that those governments bid fair soon to become but appendages to an Imperial Republicanism centering in this city.

"There is little left today of self-government in the United States. We are met, the official ambassadors of many sovereign states, as champions for its restoration. We have come here to inaugurate a movement which has for its prime purpose a challenge and a check to the untoward centralization of power at Washington. We look upon such centralization as a menace to that freedom of government contemplated by the Constitution and as a threat to the permanence of the Republic."

TAX PROPOSALS

Estate Tax.—In a report of a special committee made to this meeting Congress was severely criticized for a continuance of the estate tax. The system of joint appropriations such as those now found in highways, agricultural extension, vocational training, vocational rehabilitation, and maternity and infant hygiene were also criticized in so far as they enabled Congress to put in joint and interlocking systems of government without going to the state legislatures for authority or even consulting them.

Tax Reform.—The Chamber of Commerce of the United States has been showing a marked interest in tax reform. A letter has been sent to each member of Congress respectfully urging the serious consideration of the following:

1. In recent years there have been several reductions in the individual income tax without any corresponding relief to the corporate enterprises of the country.

2. In principle the corporation income tax should accord more nearly with the normal income tax on individuals.

3. A tax of thirteen and one-half

per cent on the entire net income of corporations is plainly unreasonable. Logically, first consideration should be given to the proper adjustment of the corporation tax since the corporations must earn and provide a large proportion of the individual incomes upon which the personal income tax is based.

4. It is manifest that a burdensome levy on the sources of production must inevitably prove a handicap on enterprise and business expansion and result in a curtailment of earnings so that the amount available for the direct tax on the producer is less and the amounts disbursed are also reduced with the result that the government revenue suffers in both places.

On the other hand a just and moderate tax on the producer is an encouragement and incentive to business progress and expansion which will be reflected back in the increased prosperity of every citizen, increasing both the direct and indirect sources of governmental revenue.

Corporation Taxes.—In a discussion of these proposals, the Chamber pointed out that all governmental units tax corporations, that in 1926 corporations paid 34 per cent of the total Federal taxes, and that in 1924 the total tax burden on corporations was about \$2,500,000,000 or two-thirds the amount paid in cash dividends. It is contended, further, that there is tax discrimination against corporations as compared with individuals and partnerships engaged in business. From the calculations the conclusion is reached that recipients of incomes from other forms of business pay not more than 5 per cent tax, and often much less, which makes the differential against corporations 8 per cent or more.

PROPOSALS OF THE NATIONAL TAX ASSOCIATION

A committee under the auspices of the National Tax Association made a report on simplification of the income tax at the twentieth annual meeting of the Association held in Toronto, October 10 to 14, 1927. The committee is composed of the following men, nearly every one of whom has had practical experience in the

administration of the income tax: George E. Holmes, chairman; Donald Arthur, Henry H. Bond, F. Morse Hubbard, Albert E. James, Robert N. Miller, Hugh Satterlee, and Charles B. McGinnis.

After a careful study of conditions the following recommendations were made:

1. The income tax should be contained in a separate act dealing solely with one subject.

2. In the next revision of the Statute, care should be taken to state, at the beginning, the entire cycle of the ordinary taxpayer's duties and obligations, segregating special provisions, including those containing definitions at the end, having in view the desirability of making those provisions of interest to the ordinary taxpayer most accessible. Administrative provisions should be segregated in a separate part of the act. All provisions relating to the Board of Tax Appeals and to appeals to that Board should be incorporated in a single statement at the end of the act or preferably printed as a separate act or embodied in the judicial code.

3. The language of the statute should be thoroughly revised with a view to eliminating so far as possible cross references, repetitions of stereotyped expressions, parenthetical in their nature, and awkward, cumbersome and obscure words and phrases.

4. Every person required by law to file a return should do so on or before March 1 (or on or before the first day of the third month following his fiscal year). The return may be tentative merely stating the taxpayer's estimate of his net income, in which event a final return shall be filed within twelve months after the taxable year. Amended returns may also be filed within twelve months after the taxable year. The last return filed within twelve months after the taxable year shall take the place of all preceding returns and shall be the basis of the taxpayer's self assessment.

5. One-fourth of the amount of the tax finally found to be due from the taxpayer shall be deemed to have

been payable on March 1, June 1, September 1, and December 1, respectively, in the year following the taxable year.

6. In case of underpayment of the tax, interest shall be added at the rate of one-half of 1 per cent for each calendar month or fraction thereof from the date the tax was payable to the date it is paid.

7. The penalty for failure voluntarily to pay the full amount of tax shown by a taxpayer to be due on his return should be equal to the interest on the underpayment.

8. The penalty for failure to file a return should be divided into two parts, a specific penalty and an ad valorem penalty. It should increase with the lapse of time after delinquency.

9. The penalty for omitting reference in the returns to any item of taxable income should be 100 per cent of the amount of tax found to be due by adding such item to the taxpayer's other income.

10. The period in which the Commissioner must act in revising a taxpayer's self-assessment should be three years from the end of the year in which the final return is filed, with respect to all items reported on the return.

11. The assessment should be made within six months after the date of the assessment letter and the tax should be collected or distraint or other proceedings for collection commenced within one year from such date unless appeal is taken by the taxpayer or extension of time to pay the tax is granted by the Commissioner.

12. The time for filing a petition with the Board of Tax Appeals should be extended to ninety days after the assessment letter.

13. Jeopardy assessments should be authorized only in cases where the taxpayer's financial position or his act or contemplated act endangers the collection of the revenue.

14. Taxpayers should be permitted to file claims in abatement in cases where the tentative or final return overstates the tax and a corrected return is filed before all installments have been paid.

15. The right to file claims for refund should expire (a) at the close of the third calendar year following the one in which the return was filed or (b) at the close of the calendar year following the one in which final payment of tax was made and (c) in cases where the decision of a Federal court of last resort materially affects the calculation of a tax for a prior year the right to file a claim for refund should exist from the date of such decision to the end of the calendar year following the one in which the decision was rendered.

16. If the commissioner rejects a claim for refund or fails to act on it for a period of six months after it is filed, the taxpayer's right to commence action thereon should expire at the end of the calendar year following the one in which the claim for refund was filed.

17. All refunds, or over-assessments credited against taxes due for other years, should bear interest from the date the tax was due to the beginning of the month in which the refund is paid or the over-assessment credited.

18. The filing of a claim for refund should open the return for the same year for additional assessment.

19. In case of the distribution of the assets of a corporation to a successor corporation or to its stockholders, and in the case of distribution of the corpus of estates and trusts, the Commissioner shall be notified by registered mail of the proposed distribution and shall immediately examine into the liability for income tax of such corporation, estate or trust.

PROPOSALS OF THE ADMINISTRATION

Mellon Statement.—On October 31, 1927, Mr. Mellon, Secretary of the Treasury, made the proposals of the administration at the opening of the hearings of the Ways and Means Committee on changes in the revenue laws. Among the more important proposals are:

1. A reduction of the rate on corporate income from $13\frac{1}{2}$ to 12 per cent.

2. An amendment of those provis-

ions of the law that apply to the tax on corporate incomes so as to permit corporations with net income of \$25,000 or less and with not more than ten stockholders, to file returns and pay the graduated individual income tax as partnerships at their option.

3. A readjustment of the rates applicable to individual incomes that fall in the so-called intermediate brackets, so as to cut taxes for all persons with net incomes between \$16,000 and \$90,000.

4. An abolition of the estate tax.

5. A retention of the present excise taxes.

The suggested changes would mean a tax reduction of about \$225,000,000. Mr. Mellon in particular favored the reduction of the tax rate on corporations since the rate on other incomes has been consistently reduced while no favor has been shown to the recipients of dividends from corporations. In recommending the estate tax he took the position that this tax properly belongs to the states, that the Federal Government had only used it as an emergency measure in the past, and that the states need the revenue while the Federal Government does not.

In advocating the continuance of the tax on automobiles, and admissions, Mr. Mellon contended that they were very desirable forms of revenue. The Federal appropriation for good roads in 1929 will be about \$75,000,000, a direct contribution to automobile owners and they should make some contribution in return. Besides, he contended, it was unfair to ask the railroads to contribute to the construction and maintenance of the roads on which their rivals operate while exempting the latter from any payment. He considers the tax on admission of more than seventy-five cents not burdensome, since it eliminates any tax on the recreation of the overwhelming majority of the citizens, and yet is a good source of revenue.

At this writing the Ways and Means Committee is conducting hearings out of which will be formulated the proposed changes. Just what these will be or what action Congress will take cannot be foreseen.

THE NATIONAL BUDGET

By A. E. BUCK

NATIONAL INSTITUTE OF PUBLIC ADMINISTRATION

In the previous issue of the AMERICAN YEAR BOOK, the budget-making procedure of the national government was outlined. An attempt is made in this issue to trace the actual practice in the formulation, adoption, and administration of the National Budget for the current fiscal year which began on July 1, 1927.

THE PRESIDENT'S BUDGET FOR 1928

Procedure.—It must be borne in mind that even before one budget is put into operation, the preparation of the next budget is begun. In other words, the budget for the fiscal year beginning July 1, 1927 (which is called the budget for 1928), was started as early as June, 1926. At that time, preliminary estimates of both expenditures and revenues for the fiscal period, which was then more than a year away, were prepared by the investigators of the Bureau of the Budget and passed on to the Director. Prior to the June meeting of "The Business Organization of the Government," the Director of the Budget laid these preliminary estimates before the President for his information. At this meeting, which was held on June 21, 1926, in the Memorial Continental Hall, the President outlined his budgetary policy for the fiscal year immediately ahead and also stated what he expected to be the limits of the budget for the next succeeding fiscal year, beginning July 1, 1927.

With reference to the latter budget, the President said:

"We are approaching the time for consideration of the estimates of appropriations for the fiscal year 1928. I have expressed to the Director of the Bureau of the Budget the hope that these estimates can be kept within a limit of \$3,200,000,000 exclusive of the postal service and tax refunds. It may become imperative before the budget is finally completed substantially to reduce that figure. This will depend entirely upon our revenue outlook for 1928, concerning which we will have better information a few months hence. I say to you frankly that the outlook today is not encouraging."

Estimates and Hearings.—Thus the President stated to the department and bureau heads of the government the general limits of the 1928 budget. Following this statement, the Director of the Budget placed before the heads of the various spending agencies such facts as he deemed desirable for their information in the furtherance of the President's wishes. Immediately after this meeting, the Director requested the spending agencies to submit the usual detailed preliminary estimates. These were sent to the Bureau of the Budget by July 15, and were forthwith tabulated in order to arrive at the aggregate amount. The Board of Estimates, consisting of the Director of the Budget and his principal subordinate officers, then made a study of the preliminary estimates and advised each spending agency as to the maximum amount that would be available for it to expend during the next budget period. The spending agencies then prepared their regular estimates with this amount in mind and submitted them to the Bureau of the Budget by September 15, as required under the law.

From the time these estimates were received until about the middle of November, the staff of the Bureau of the Budget was busy making investigations of the requests and holding hearings at which the bureau heads and other spending officers appeared. After these hearings, certain adjustments in the estimates were made, usually in conference, and the total requests were approved by the President. The estimates were then tabulated and summarized, the President wrote his budget message, and the budget document for 1928, consisting of 1,340 large pages, was published. This document was delivered to Congress on December 8, 1926, and the executive budget message was widely published and commented on by the leading newspapers of the country. In fact, this message is all of the

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national budget that the citizens generally get an opportunity to see; they never see the printed document unless they visit some public library.

Amount.—As presented to Congress, the budget for 1928 exceeded by more than \$56,000,000 the maximum expenditure figure of \$3,200,000,000 set by the President. Apparently, it was not possible by a study of the detailed estimates in the fall of 1926 to curtail the requests of the spending agencies as much as the President had indicated in June. The total of the budget, including the expenditures for the postal service, amounted to \$4,014,571,124.60.

Estimates of Receipts.—Since the beginning of the national budget system, the total receipts in the President's budget have been continually underestimated. For the 1923 budget, they were underestimated by more than \$503,000,000; for the 1924 budget by \$650,000,000; for the 1925 budget by \$86,000,000; for the 1926 budget by \$321,000,000; and for the 1927 budget by \$304,000,000. The latest figures, which are shown in the budget for 1929, indicate that the estimated receipts in the 1928 budget were low by \$302,000,000. This has already become the subject of some criticism, it being claimed that the receipts are "intentionally underestimated in order to promote the President's policy of keeping down appropriations and preventing too great tax reduction." Although the estimates are prepared about eight months before the beginning of the budget period, it would nevertheless seem possible to make them more accurate, especially since conditions have become somewhat normal.

CONGRESSIONAL ACTION ON THE BUDGET

Committee Hearings.—When the President's budget for 1928 reached Congress, it was first considered by the Committee on Appropriations of the House. Had the budget contained any revenue proposals, these would have been referred to the Committee on Ways and Means of the House. The Committee on Appropriations, consisting of 35 members and divided into ten subcommittees, be-

gan holding hearings as early as November 8, 1926. By starting these hearings a month before the President's budget was submitted to Congress, the members of the Committee were acquainted with the needs of the spending agencies when Congress convened on December 6. Since the subcommittees are each charged with framing one of the ten major appropriation bills, some of these bills were almost ready for consideration when the session opened.

The House acted expeditiously in handling the appropriation bills, the last regular annual bill being passed on February 8, 1927, which was nearly a week earlier than it had occurred at the previous short session. However, when the bills reached the Senate, the filibustering tactics and the legislative stalemate which existed in that body prevented two of the measures from passing. One of these was the second deficiency bill for the fiscal year 1927, and the other was the public buildings appropriation bill for the fiscal year 1928. In the aggregate, these bills amounted to over \$135,000,000, the second deficiency bill containing \$115,000,000 and the other bill almost \$20,000,000.

Deficiency Estimates.—The President, as he is permitted to do under the law, submitted to Congress during the session certain supplementary and deficiency estimates. These amounted to \$204,193,167.01, of which sum \$8,400,633 was supplemental estimates for the fiscal year 1928, increasing the President's budget for 1928 to \$4,022,971,757.60. The remainder was largely deficiency estimates applying to the fiscal year 1927 and prior fiscal years. The sum total, therefore, of the President's expenditure proposals before Congress was \$4,218,764,291.61, excluding the estimates in connection with the two bills which failed to pass the Senate.

Increases and Decreases.—In taking action on the President's expenditure proposals, Congress reduced the total by \$7,982,821.20. Of course, this did not mean a reduction of the executive figures all along the line; two of the ten major appropriation bills passed during the session were

THE NATIONAL BUDGET

considerably increased, namely, the one for the Navy Department and the one for the departments of State, Justice, Commerce, and Labor. The Navy Department bill exceeded the President's budget by \$1,511,457 and the other bill by \$31,560. Both bills were reported out of the committee and passed the House within the limits of the budget, but were made to exceed the budget as the result of additions made by the Senate and adhered to in the conference committee. In the case of the naval appropriation bill, the excess over the budget was due to the increase in the number of enlisted men from 82,500, provided for by the House bill and the estimates, to 83,250 men, instead of 84,000, as proposed by the Senate, also by an increase in the appropriation for naval aviation, and by the addition of \$450,000 for the commencement of work on the three remaining light cruisers under the act of 1924.

The only other radical change from the budget was made in the appropriation bill for the War Department. The President's estimates were based on an average enlisted strength during the fiscal year 1928 of 115,000 men. Congress increased this number to 118,750, and also increased the ration of enlisted men from approximately 36 to 40 cents per day.

The total amount of the War Department appropriation was not increased over the budget proposal, since the additional requirements amounting to some \$4,400,000 were to have been provided for in the second deficiency bill which failed to pass.

APPROPRIATIONS

The total of all appropriations made by this congressional session, which ended March 4, 1927, may be summarized as follows:

Total in regular annual acts	\$2,608,527,602.47
Total in deficiency act...	185,612,334.01
Total in miscellaneous acts	10,600,000.00
Total permanent appropriations	1,406,461,333.93
Total for session	\$4,211,201,270.41

When classified according to fiscal years, the above grand total gives the following results:

Fiscal year 1928.....	\$4,014,988,936.40
Fiscal year 1927.....	195,299,188.33
Fiscal year 1926 and prior years	913,145.68
Total.....	\$4,211,201,270.41

The grand total of appropriations may be somewhat visualized by breaking it up into large groups, representing the principal objects of expenditure. These are shown in the following tabulation:

	Amount	Per-centage
Interest on the public debt.....	\$ 755,000,000.00	17.93
Sinking fund and other public debt retirement funds.....	563,629,560.93	13.38
Veterans' Bureau, including insurance, compensation, hospitalization, adjusted compensation, and hospital construction....	473,400,000.00	11.24
Postal service	755,336,200.00	17.94
Navy	320,158,957.00	7.60
Military activities, War Department (Army).....	282,118,885.00	6.70
Pensions, all wars prior to the World War.....	222,740,000.00	5.29
Cooperative construction of roads and for roads in forest reserves	78,900,000.00	1.87
Refund of internal revenue taxes.....	175,000,000.00	4.16
Shipping Board and Merchant Fleet Corporation.....	12,290,000.00	.29
River and harbor improvements, Panama and other canals, flood control, and work at Muscle Shoals.....	76,144,600.00	1.81
Enforcement of prohibition, including sums for the Prohibition Unit, the Coast Guard, and estimated amounts under the Department of Justice, courts, and prisons.....	35,000,000.00	.83
All other activities, including the Executive Office, Congress, the Judiciary, the executive departments, and independent establishments	461,483,067.48	10.96
Total for session.....	\$4,211,201,270.41	100.00

On the revenue side, the budget remained practically as presented by the President. Congress having made no change in it. Considerable tax

reduction was proposed during the session, but the Senate filibuster prevented any definite action being taken in this direction. In his budget message, the President had suggested a temporary tax reduction to cut down the estimated surplus should Congress regard it as being too large.

ADMINISTRATION OF THE BUDGET

Bureau of the Budget.—The actual administration of the 1928 budget started on July 1, 1927, hence at the time of this writing scarcely one half of the fiscal or budgetary period has elapsed. Aside from the various spending departments and agencies, the authorities chiefly concerned with the administration of the budget are the President and the Comptroller General. The President has the assistance of the Bureau of the Budget in carrying out the budget, while the Comptroller General is the independent fiscal officer in charge of the General Accounting Office. In addition, the Treasury Department has complete control over the collection and custody of the moneys which flow in under the income side of the budget.

It is mainly through the Bureau of the Budget that the President keeps in constant touch with the expenditure side of the budget. As soon as the appropriation bills are enacted by Congress, the departments and agencies are asked to plan their expenditures for the coming fiscal year. This planning is in the nature of allotments of the amounts appropriated. On April 6, 1927, the Director of the Budget issued an order (Circular No. 203), with reference to the "apportionments of appropriations" under the 1928 budget. This order required each spending agency to apportion before June 30 all its items of appropriation, including permanent appropriations, for the ensuing fiscal year, according to quarters and to set aside a small general reserve. The purpose of this reserve was to meet departmental emergencies that could not be anticipated at the time the apportionment was made and also to effect savings in the appropriation where possible without detriment to the service. Forms were

furnished to the spending agencies upon which they would make these apportionments, and then file a copy of the same with the Bureau of the Budget.

Not later than the middle of each month following the end of a quarter the spending agencies are required to report to the Bureau of the Budget the amount of obligations, actual or authorized, against each apportionment and the amount actually obligated under the corresponding apportionment for the quarter ending three months before. By this procedure the Bureau of the Budget is enabled to keep up with the actual rate of expenditure in the various departments and agencies. The Bureau may caution or admonish the departments and agencies in regard to their expenditures, but it has no legal power to control or check them at any time. However, its authority to fashion the succeeding budget makes its advice respected in carrying out the current budget.

The apportionment or allotment of appropriations by the spending agencies according to the quarters of the fiscal year is not a new procedure. Congress first provided for such a scheme in the so-called anti-deficiency act of 1906. The purpose of it at that time was to prevent the departments and agencies from over-expending their lump-sum appropriations. After a few years, this act was practically disregarded by the spending agencies. However, it was again revived when the budget system was adopted and under its provisions the Bureau of the Budget issued the order noted above.

Agency Reserves.—According to the latest report of the Director of the Budget, the setting up by each spending agency of a small reserve, amounting to from 1 to 5 per cent of its appropriations, has already been quite effective not only in meeting departmental emergencies but also in saving funds. This reserve is expendable only on the approval of the head of the spending agency concerned. Two other devices have been suggested by the Director of the Budget to assist the spending agencies in saving their appropriations. One

is a reduction by 2 per cent in the cost of personnel through omitting to fill vacancies that arise during the fiscal year. Those agencies that are able to make a 2 per cent reduction along this line qualify for what is termed the "Two Per Cent Personnel Club."

The other device is to encourage each of the 546,000 persons on the active pay roll of the national government to save as much as a dollar during the year in the performance of their duties. Those who do so are to belong to the "Loyal Order of Woodpeckers," a term which General Lord derived from the story of the fellow who, when asked if he had ever done anything to conserve our forests, said that he remembered having once shot a woodpecker.

Coordinating Agencies.—The President has established in connection with the Bureau of the Budget certain coordinating machinery which assists, to a certain extent, in the execution of the budget. This consists of a Chief Coordinator, nine area coordinators, and a number of coordinating boards and associations. These agencies have been in existence for about six years. During this time, their sphere of influence has been gradually broadened. It is their duty to keep in touch with the routine business operations of the various governmental units, not only at Washington, but scattered throughout the country. They seek to bring about cooperation between the departments and other units in carrying on related work, particularly in the use and disposition of surplus supplies and materials. One of the biggest tasks of the Chief Coordinator and his assistants has been to dispose of the surplus war materials in such a way as to enable the Government to derive the maximum salvage value from them.

Business Meetings.—The President outlines his policy with reference to the administration of the budget twice a year at the semiannual meetings of "The Business Organization of the Government." All heads of departments, bureaus, and other agencies of the Government, especially those situated in the District of Co-

lumbia, attend these meetings which are held in January and June. Both the President and the Director of the Budget address those present and their speeches are usually broadcast to the whole country over one of the leading radio chains. The utterances of the President at these meetings are as significant as those in his annual budget message to Congress; in fact, his speech at the June meeting is usually much more important from the standpoint of the execution of the budget. In his address at the meeting on June 10, 1927, he said by way of introduction:

"It is essential that we take periodic counsel together. For this purpose we gather in open meeting twice each year. These meetings are a new departure in the conduct of the business of nations. We have found them necessary to coordinated action. Here we meet on a common footing, with one objective—the welfare of the people. These meetings are therefore of national importance. It is here we report to the people on our stewardship and plan our policies for future operations. A business without a policy is a poor business."

The President then went on to outline in general terms his fiscal policy for the coming budget period. He discussed the available surplus in the Treasury for the fiscal year then drawing to a close, and concluded by setting a limit of \$3,300,000,000, excluding debt redemption, tax refunds, and the postal service, on the budget for 1929.

AUDIT

The information for the purpose of currently administering the budget is furnished through the various departmental accounting offices. These offices perform the administrative audit, that is, they pass on all claims before they are approved for payment. They maintain accounts for the departments; they report on apportionments of appropriations to the Bureau of the Budget; they gather and classify the data required in the preparation of the budget. In some respects their work is duplicated by the General Accounting Office.

Independent auditing control over the income and expenditures of the budget is exercised by the General Accounting Office. As stated above, this office is under the direction of

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the Comptroller General, who is appointed by the President for a term of 15 years and removable only by Congress. The purpose of the office is to strengthen congressional control over the administration in regard to the collection and disbursement of funds. In this respect the office is similar to that of the Comptroller and Auditor General of Great Britain created in 1866 as a direct agent of Parliament.

The control performed by the General Accounting Office over expenditures is of the post-audit type; that is, the bills and vouchers usually reach the office after the obligations have been incurred and payments

made. The office is therefore concerned mainly with seeing that the transactions are regular and the amounts paid are within the limits of the appropriations. If there has been an overpayment, or an improper disbursement, a refund is demanded or an adjustment is made. The office has final authority to settle claims or enforce collections due the Government. As yet, none of its functions has been properly developed; in fact, some of them are not even clearly defined. This situation has brought about severe criticism of the work of the office by several of the spending agencies and, in some cases, has even led to court action.

THE NATIONAL DEBT AND ALLIED DEBTS TO THE UNITED STATES

By FRANCIS H. SISSON

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REDUCTION OF NATIONAL DEBT

Fiscal Year 1927.—During the fiscal year 1927, the national debt of the United States was reduced \$1,133,008,814. On June 30, 1927, the close of the fiscal year, the gross debt amounted to \$18,510,174,266, consisting of the following obligations:

Pre-war bonds	\$ 766,549,790
Liberty Bonds	11,690,109,250
Treasury bonds	2,763,735,550
Treasury notes	2,019,194,550
Certificates of indebtedness..	702,095,500
War savings certificates....	309,259,326

Total interest-bearing debt	18,250,943,966
Matured debt on which interest has ceased.....	14,707,235
Non-interest bearing debt..	244,523,065

Total Gross Debt..... \$18,510,174,266

Post-War Reduction.—This total compares with a gross debt outstanding June 30, 1926, of \$19,643,183,080. On June 30, 1919, the debt amounted to \$25,482,034,419, and on August 31, 1919, it reached \$26,594,267,878. The reduction in the interval from June, 1919, to June, 1927, was accordingly \$7,970,860,153, or 31 per cent. of the obligations outstanding on the earlier date.

In accordance with the traditional

policy of the Government, retirement of the public debt has proceeded without interruption since 1919. The reduction of \$1,185,184,693 in 1920 was the largest occurring in this period. In 1921, the following year, despite the commencement of sinking fund operations, the annual retirement of \$321,870,915 was the smallest. The reduction of \$1,133,008,814 brought about in the fiscal year 1927 compares with an average annual retirement of \$834,121,620 in the preceding seven years.

Saving in Interest.—In addition to these operations directed toward lowering the principal amount of the outstanding debt, the Treasury has succeeded in reducing the average rate of interest upon the debt by refunding high interest-bearing securities into others carrying lower rates. From 4.29 per cent. in the fiscal year 1921, the average rate of interest upon the debt has been reduced to 3.96 per cent. on June 30, 1927. A saving of more than \$35,000,000 in annual interest charges was accomplished by the refunding of the Second Liberty loan this year.

Cut in Gross Debt.—The reduction in the gross debt during the past

fiscal year was effected by the appropriation of \$613,444,969 in surplus revenues to debt payment and retirements amounting to \$519,563,845 chargeable against ordinary receipts. In accordance with the reduction program effective since 1920, retirements chargeable against ordinary receipts last year consisted of \$333,528,400 from the operation of the legally prescribed sinking fund, \$19,254,500 from repayments of principal by foreign governments, \$159,961,800 from redemption of bonds received as repayments of principal and interest by foreign governments under debt settlement agreements, and \$26,073,644 from miscellaneous sources. An increase of \$21,470,042 in the net balance in the general cash fund of the Treasury operated as an addition to the total gross debt.

REFUNDING AND RETIREMENT

Sinking Fund and Foreign Payments.—Of these various methods of debt reduction the sinking fund and repayments by foreign governments under debt settlement agreements are the only sources of definite permanence. In numerous past years retirements effected through reductions in the net balance in the general Treasury cash fund were substantial, aggregating 18 per cent. of the total reduction prior to June 30, 1926. Future surpluses of ordinary receipts over expenditures will doubtlessly continue to be applied toward debt payment when available, but reliance upon this source of funds for retiring the debt is necessarily impaired by the possibility of a shrinkage in tax returns due to recession of business activity and the granting of increasing demands for tax reduction.

Treasury Surplus.—Official estimates of the surplus for the fiscal years 1928 and 1929 are \$454,283,806 and \$252,540,283, respectively. The surplus occurring in the fiscal year 1927 amounted to \$635,809,922. The estimates for the next two years are based, of course, on present tax rates.

Treasury Policy.—In its handling of the debt the Treasury has consistently followed a policy based on (1) a steady reduction of the debt by retirement of the principal and

(2) the refunding as rapidly as possible of obligations from high to low interest rates. The effectiveness of the combination of these two operations has been demonstrated by the resultant decline in the annual service charge for the debt, which is necessarily a burden upon the taxpayer.

The desirability of quick retirement of the gross public debt was recognized by the Treasury authorities at the time of the formulation of the debt reduction program which has been operating since 1920. Under the terms of this program, which was incorporated in the Victory Loan Act of 1919, the virtual extinction of the debt was contemplated in twenty-five years. To accomplish this the total debt outstanding on July 1, 1920, was separated into two portions—one representing borrowings of the Government for its war expenditures, the other comprising those obligations undertaken to lend to the allied nations.

Sinking Fund.—For retirement of the domestic borrowings a sinking fund was created, providing for the annual retirement of bonds at an average price not exceeding par in an amount equivalent to 2½ per cent. of the domestic obligations as of July 1, 1920, plus a sum equivalent to the interest which would have been payable on bonds retired by this fund. The operation of this cumulative sinking fund was calculated to extinguish this portion of the debt by 1945. Provisions elsewhere in the act stipulated that retirement of the remainder of the public debt be brought about by repayments by foreign nations under terms to be arranged in debt settlement agreements. Subsequent delay in remitting these payments has removed the possibility that this portion of the debt will be retired as rapidly as that covered by the sinking fund, unless supplemented from other sources.

The application of surplus revenue and reductions of Treasury cash balances have greatly expedited debt reduction under this program. While smaller reliance may be placed upon these sources in the future, the sinking fund is expanding each year in consequence of its cumulative fea-

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ture. Larger funds for debt reduction from this source would, however, fail to offset the lapse of such substantial amounts as have been hitherto provided by appropriations from the annual surpluses. As the retirement of the debt progresses, what may be called the "ratio of retirement" increases. That is, since the interest which would have been paid on bonds retired for the sinking fund had they been left outstanding becomes an annual cumulative addition to the sinking fund, the refunding of the debt upon a lower interest basis increases the amount that becomes available for the sinking fund. As the supply of Government securities is lessened, further refunding at lower rates is facilitated.

Bond Redemption.—Bonds retired through the sinking fund in the past fiscal year amounted to \$333,528,400, or approximately one-half the total reduction appropriated from the 1927 fiscal surplus. During the next five years the volume of bonds maturing and available for redemption through the sinking fund is far in excess of the amount available for such retirements, while after 1933 the sinking fund is larger than available maturities. Refunding of the Third and Fourth Liberty loans into obligations, maturing or callable at convenient dates, would provide a supply of bonds for redemption in those years to permit retirement at a price within the limit stipulated by law.

Foreign Payments.—Retirement of the remainder of the national debt by repayments from foreign governments is subject to the provision of the present law that only those payments representing actual instalments upon loans granted under the Liberty Loan acts may be applied toward debt payment. In effect, however, all payments of foreign governments, both of principal and interest, have been used for debt reduction, since these instalments are receivable in the form of United States Government obligations at par.

The prices of all United States bonds are now above par, and payments by foreign governments can therefore no longer be profitably made in the form of United States Govern-

ment bonds. Neither the floating debt nor the pre-war obligations of the United States are subject to the sinking fund or foreign government payment. Retirement of the present floating debt amounting to about \$1,750,000,000 is not deemed desirable, however, since this total represents the approximate minimum necessary to avoid money market disturbances on tax payment dates and to permit the Treasury to carry the lowest possible cash balance.

Calculations.—Upon the basis of present calculations, under which payments from the sinking fund and from foreign debt repayments increase rapidly in later years, the amount which becomes available for retirement exceeds the total principal amount of the debt outstanding shortly after the year 1950. Obviously any disturbance in the existing schedule, such as cancellation or downward revision of foreign government indebtedness, a severe business recession or a domestic money stringency would extend the date of payment of the debt to some later time. It is reasonable to suppose that the period of most rapid reduction of the debt has passed, since retirements in the interval from 1919 to 1927 have been accomplished under exceptionally favorable circumstances. Neither the unusually large Treasury cash balance of 1920 nor the enormous annual surpluses of the years thereafter are likely to recur in the near future.

INTER-ALLIED DEBT

Funding Agreements.—There have been few important developments in connection with the debts of foreign governments to the Government of the United States since the signing of the Franco-American debt-funding agreement on April 29, 1926. At that time twenty foreign governments were indebted to the United States. Of these, thirteen had reached funding agreements with the American Government, namely, Great Britain, France, Italy, Belgium, Poland, Czechoslovakia, Rumania, Yugoslavia, Estonia, Finland, Lithuania, Latvia and Hungary.

Outstanding Debts.—In addition to these countries, seven others owed

money to the United States. These were Armenia, which no longer had an independent government, whose indebtedness amounted to \$12,000,000; Austria, which was granted a moratorium until June 1, 1943, by act of Congress on her debt of \$11,959,917 for relief supplies; Russia, whose Government had not been recognized by the United States and to which advances of \$192,000,000 were made, Greece, which borrowed \$15,000,000; Liberia, with a debt of \$26,000; and Cuba and Nicaragua, to which advances of \$10,000,000 and \$176,000, respectively, were made and where settlements were negotiated independently of the Debt Funding Commission.

France.—The list of debtors has now been reduced to eighteen, Cuba and Liberia having entirely liquidated their obligations to the United States Government. The Franco-American agreement has not yet been ratified by the French Parliament, but France has made payments during the past year aggregating \$20,367,057.25 on account of interest on obligations received from the Secretary of War and the Secretary of the Navy for sales of surplus war material.

Greece.—The funding agreement recently concluded with Greece disposes of the last war debt, as far as the United States is concerned, except those of Armenia and Russia. Under this agreement, the Greek debt is to be funded under terms similar to those provided for the other debtor countries. On the sum of \$15,000,000 originally advanced, interest is calculated at 4¼ per cent. up to December 15, 1922, and on the amount then due at 3 per cent. to January 1, 1928. The aggregate amount of principal and accrued interest on the latter date, totaling \$19,659,836, is funded over a period of sixty-two years at an interest rate of 3 per cent. An additional loan of \$12,167,074 is to be extended for a period of twenty years, the latter amount to be covered by a sinking fund and to bear interest at 4 per cent. In consideration of this new advance, the Greek Government agrees to forego all claims for further loans under the

agreement reached in 1918 between Greece, the United States and other Allied governments, by the terms of which the Greek Government had maintained it was entitled to further credit from this country.

Interest Payments.—With the foregoing exceptions, the status of the inter-governmental debts has remained essentially unchanged during the past year. Considerable amounts, however, have been received on account of interest under the funding agreements. During the twelve months ended November 15, 1927, Belgium paid \$2,000,000, Estonia \$125,000, Finland \$265,155, Great Britain \$135,525,000, Hungary \$58,732.51, Latvia \$8,000, Lithuania \$94,271.63 and Poland \$1,750,000. There have also been small interest payments on unfunded indebtedness by Liberia, Russia and Nicaragua, in addition to the payment by France mentioned above. These sums bring the total amount received for interest up to November 15 last to \$1,346,110,028.30.

Payments of Principal.—To this must be added \$291,623,253.56 received from repayments of principal on unfunded obligations and \$116,408,105.50 received from repayments of principal under the funding agreements. Repayments of principal to date on the so-called "war debts," therefore, amount to \$408,031,359.06 and principal and interest payments combined to \$1,754,141,387.36.

TOTAL FOREIGN DEBTS TO UNITED STATES

The total indebtedness of foreign governments to the Government of the United States on November 15, 1927, amounted to \$11,871,848,233.34, constituted as set out on p. 208.

Total receipts by the Treasury on account of the indebtedness of foreign governments during the past fiscal year amounted to \$206,089,173. Of this sum, \$160,389,600 was accounted for by payments of interest, while \$45,699,573 represented payments against principal. From June 30, 1927, to November 30, 1927, additional payments aggregating \$10,246,564 have been received. Total payments against the principal amount of the funded indebtedness

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Obligations received under Liberty bond acts.....	\$ 9,598,236,575.45
Obligations received for surplus supplies sold on credit.....	599,134,255.71
Obligations received for relief supplies furnished on credit.....	140,952,766.04
Total obligations originally received.....	\$10,338,323,597.20
Payments on account of principal of obligations so received.....	291,623,253.56
Obligations held at date of funding or now held if unfunded.....	\$10,046,700,343.64
Accrued interest funded into principal.....	1,811,871,122.13
Total unfunded obligations and funded indebtedness at funding date	\$11,858,571,465.77
Principal repayments under funding agreements.....	116,408,105.50
Net funded and unfunded indebtedness.....	\$11,742,163,360.27
Accrued and unpaid interest (unfunded).....	129,684,873.07
Total indebtedness	\$11,871,848,233.34

since the inception of the settlement agreements amount to \$116,408,105, of which approximately \$100,000,000 consists of repayments made in the form of United States securities issued since April 1, 1917. Aggregate interest payments, including funded interest, received by the United States under the debt agreements up to the end of the fiscal year 1927 total \$624,871,336. Payment of interest in United States obligations amounted to approximately \$565,000,000. Interest payments by Great Britain alone amount to \$615,000,000 of this amount.

Value of Foreign Indebtedness.—Upon the basis of a $4\frac{1}{4}$ per cent. rate of interest, the payments to be received from foreign governments over a period of sixty-two years under the debt-funding agreements had a value at the funding dates of approximately \$6,862,285,000. If the subsequent principal repayments under the funding agreements be deducted, the remainder, or \$6,745,877,000, plus

accrued and unpaid interest amounting to \$129,684,873.07, may be said to represent approximately the present value of the funded debts. Adding to this sum the actual amount of the unfunded obligations, we find that the present value of foreign indebtedness to the United States Government is about \$7,119,500,000.

A comparison of this total with the amount of the public debt of the United States on September 30, 1927, or \$18,477,697,655.39, gives an approximate idea of the relative importance of foreign debt repayments as a factor in the retirement of the public debt of this country. These figures indicate that somewhat less than 40 per cent. of the public debt is covered, so to speak, by the obligations of foreign governments held by the United States Treasury, and that the effect of the cancellation of those obligations would be to increase the burden on American taxpayers on account of the public debt by nearly 65 per cent.

STATE REVENUES, EXPENDITURES AND BUDGETS

BY MERLIN H. HUNTER

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STATE EXPENDITURES

Trend.—In comparing the expenditures of Federal, state and local governments, those of the states comprise only about 15 per cent of the total. This comparative insignificance of state expenditures takes on an entirely different aspect when the increase for the last few years is taken into consideration. For each of

the years following 1915 the increase of the expenditures of the forty-eight states was more than 12 per cent a year, while the increase in the expenditures of cities was only about 10 per cent over those of the preceding year.

The trend in state expenditures can readily be noted from the following table. The compilations are

STATE REVENUES, EXPENDITURES AND BUDGETS

made from the publication of the *Statistics of States* of the volume for Bureau of the Census, *Financial Statistics* 1925, the latest available.

COMPARISON IN EXPENDITURES OF STATES, 1915 AND 1925

(000 omitted)

Item	Expenditure		Increase over 1915	
	1915	1925	Amount	Per Cent
General government	\$ 44,508	\$ 85,569	\$ 41,061	92
Protection to person and property.....	26,295	55,834	29,539	112
Development and conservation of resources	16,559	56,386	39,827	241
Health and sanitation.....	9,454	24,839	15,385	163
Highways	22,768	144,280	121,512	534
Public institutions	89,189	168,754	79,565	89
Education	147,164	397,700	250,536	170
Recreation	879	2,746	1,867	212
Miscellaneous	22,214	99,370	77,156	347
Total.....	379,030	1,035,478	656,448	173

Education.—State expenditures for education are of two kinds, those spent directly by the states and those which are grants in aid to the local governmental units. The latter type comprise at present about 65 per cent of the total and have been increasing more rapidly than the expenditures made directly by the states. The increase in state expenditures for education has been at a greater rate than has been the total increase of educational costs, indicating that the states are assuming a greater share of the burden.

The great increase in educational costs can partially be explained by the general increase in prices. This, however, does not tell the whole story. Since the World War, especially, education has become more "popular" largely because the war portrayed, as it has never before been emphasized, the advantages held by the man with an education. High schools and state universities, as well as the public school systems, have been overtaxed with the increased enrollment with the attendant swelling costs.

Public Institutions.—The institutions included under public institutions are those providing charities, hospitals, and corrections. These are the most discouraging of all state expenditures since they continue rapidly to increase, yet with all the cost of taking care of these "human culls"

little progress is made at eliminating the cause.

The high prices resulting from the war has had some influence in making larger numbers dependent on public funds for subsistence since an income which would formerly suffice is no longer adequate. The number in the institutions for the feeble-minded, insane, and in the corrective institutions, moreover, has increased at an alarming rate,—about 25 per cent in the last decade. Not only has the number greatly increased, but the method of treatment has also changed. No longer are the institutions looked upon as merely places of incarceration, but to the greatest extent possible corrective, which greatly enhances the cost.

Highways.—Of all state expenditures, those for highways have shown the most rapid growth. In fact, in some states, the expenditure for this item takes rank first in importance. A part of the expenditure is for construction of new roads and a part for maintenance. Since the emphasis upon the importance of highways is so recent, the greater present cost is for construction. As time goes on, however, and the systems are completed and the constructed roads require more and more repairs or replacement, the costs for maintenance will require the larger amount of funds.

The policy of the Federal Govern-

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ment has been somewhat responsible for the increase in state expenditures. The offer to contribute a certain sum for highway construction on condition that the state appropriate an equal amount has led to road-building enterprises which would not otherwise be undertaken. It has appeared to be poor economy not to take advantage of the offer of a gift, even though it has entailed the use of

funds which otherwise would not have been spent.

REVENUES

Sources of State Funds.—The latest figures giving in detail the sources of all the states are for 1925, found in the report of the Bureau of the Census, *Financial Statistics of States*. The total of revenue receipts was \$1,485,242,000 divided as follows:

REVENUE RECEIPTS OF STATES

(000 omitted)

General property taxes.....	\$358,602	Subventions and grants.....	\$143,492
Special property taxes.....	235,864	Highway privileges, rents and interest.....	67,063
Poll taxes.....	3,930	Earnings of general departments...	118,732
Business and non-business taxes...	508,974	Earnings of public service enterprises.....	10,096
Special assessments.....	31,176		
Fines, forfeits, and escheats.....	7,314		

While a considerable reliance is placed upon property as a source of state funds, as can be seen from the above figure, yet the percentage of the total derived from property taxes is gradually becoming less while a

greater reliance is being placed upon business taxes. The following table, also taken from *Financial Statistics of States*, shows the percentage reliance upon different sources for certain years.

PER CENT OF STATE REVENUES FROM DIFFERENT SOURCES

Year	Source						
	General Property Tax	Special Property Tax	Poll Tax	Business and License Taxes	Earnings of General Depts.	Subventions and Grants	All Other
1925.....	24.0	15.9	0.3	34.3	8.0	9.7	7.8
1924.....	25.7	16.6	0.3	31.8	8.3	9.8	7.7
1922.....	30.0	16.9	0.7	26.3	10.1	9.5	6.3
1919.....	35.1	18.2	0.3	24.5	12.3	2.5	7.0
1917.....	34.9	21.2	0.4	21.9	12.0	2.1	7.5
1915.....	40.6	18.2	0.7	30.3	11.0	1.6	7.6

Legislation.—With the great increase in expenditures and taxes came a marked increase in public interest in the affairs of the Government, and especially those which mean a greater expenditure of money. One direction which this has taken has been a scrutiny of the constitutions under which the revenue systems are formulated as well as a scrutiny of the laws themselves. The result has been many changes in state constitutions and laws as they affect the levy and collection of taxes. The legislatures of forty-five states have met within the last year and in most states the subject of taxation was given considerable attention. It will

be important to note some of the more important changes of the past year.

Constitutional Considerations.—In some states amendments are to be voted upon at some future election while in others amendments have been voted upon. The electorate of Minnesota will vote upon crediting two-thirds of the proceeds of the gasoline tax to the trunk highway fund and one-third to the state road and bridge fund. At present, the entire amount goes to the trunk highway fund. In North Carolina an amendment is to be voted upon which will permit the classification of intangible personal property for pur-

STATE REVENUES, EXPENDITURES AND BUDGETS

poses of taxation, while the people of Washington will vote upon practically the same proposition. In North Dakota the people will decide whether the State Board of Equalization shall have power to assess the property of electric light, heat and power companies and the property of all other companies used directly or indirectly in the carrying of persons, property or messages.

Two proposed amendments were defeated. The people of Oregon, at a special election, rejected an income tax and the limitation of the amount of the state tax. In Texas an amendment was defeated which provided for property classification.

PROBLEM COMMISSIONS

Arkansas and California.—One evidence of the increased interest in fiscal affairs is the authorization of special commissions to study existing problems. In Arkansas the Governor is to appoint a commission consisting of seven residents of the state for the purpose of investigating the subject of taxation and business and corporation laws. California appropriated \$75,000 to be used at the direction of the Governor for the purpose of a special tax investigation commission.

Illinois provided for two commissions. One is called a joint legislative revenue committee, and is to consist of nine members, four from the legislature and five appointees of the Governor, representing varied industries. It is to study the laws and methods of assessing property and to investigate methods of taxation in Illinois. The other is a revenue investigation commission of seven members, four from the legislature and three to be appointed by the Governor.

Other States.—The Governor of Maryland may at any time appoint five people to constitute the Maryland Tax Revision Commission. A commission is provided in Massachusetts to revise the laws relative to taxation. It is to consist of one senator, three representatives and three appointees of the Governor. A commission of three from the Senate and three from the House was created in Minnesota to study the laws

relating to the taxation of intangible personalty. In New Hampshire a recess commission of nine members is to study tax revision. In North Carolina a commission of five members is to be appointed by the Governor to make a comparative study of taxation. Texas provided for a tax survey committee of fifteen, three from the Senate, four from the House, and eight to be appointed by the Governor. One of the latter must be a person who has made a special study of taxation.

CHANGES IN ASSESSMENT OF PROPERTY

One of the big difficulties with the taxation of property has been to get accurate assessment. A number of states legislated concerning this in the last session of the General Assembly. Illinois provided that property shall be assessed at full value instead of one-half full value. In Minnesota all real estate and improvements, except such as assessed by the State Board of Equalization, is to be assessed biennially instead of annually. In New York the Tax Commission must now approve every assessment of state-owned lands by the assessing officers of a village before the taxes can be levied thereon. In North Carolina better provision is made for local assessment. The qualifications of the county supervisor are enumerated, and he must sit with the county commissioners when they sit as an equalization board. Any taxpayer has the right to appeal to the State Board of Assessments.

EXEMPTIONS AND ABATEMENTS

Modifications.—Many states made modifications in the laws concerning exemption from taxation. In Connecticut an exemption up to \$1,000 of property belonging to an individual who served in the Army, Navy, Marine Corps or Revenue Marine Service during the Philippine Insurrection or China Relief Expedition and who has an honorable discharge. In general, all cash on hand and money on deposit is exempt from taxation. In Idaho, also, property belonging to veterans of the Spanish-American War

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and the Philippine insurrection has been added to the exempt list. In Iowa the dependent widowed mother of a soldier, sailor or marine is allowed exemption, while in Maryland veterans of the Spanish-American War are given the same exemptions as veterans of the Civil War. In Iowa, also, property of chambers of commerce and boards of trade used solely by them is exempt from taxes as is also the property of certain industries in certain counties.

In New Hampshire, towns and cities are given the privilege, by a two-thirds vote, to allow for five years an abatement of taxes to any manufacturing concern. After four years another vote may be taken extending the time another five years, but not exceeding ten years in all. In New Jersey, bonds issued by any public utility company of any state are exempt from taxation while owned by any savings bank of New Jersey. In New Mexico the exemption of \$200 has been extended to general property instead of to personal property as formerly. In New York the real property of bar associations has been added to the exempt list, while in North Carolina the property of patriotic and historical associations is so classed. In Rhode Island the veterans of the Spanish-American War and World War are given the same exemption privileges as those of the Civil War. In South Carolina all cotton and textile enterprises in certain counties valued at more than \$100,000 are exempt from all except school-taxes for a period of five years from the time of their establishment.

COLLECTION OF TAXES

In Arizona, in order to remedy the evil of delinquent taxes, all court actions of the county treasurers against tax delinquents are to be prosecuted as actions for the foreclosure of mortgages. Much the same provision is put into effect in Idaho. In addition, a tax levied upon not more than \$1,000 of personal property is a prior lien on real property, but if the value is more than \$1,000 then the lien of taxes on the amount over \$1,000 is subordinate to any recorded lien. In Iowa the time of the lien

of personal taxes upon real estate has been fixed at ten years. In Minnesota taxes levied upon personal property are made a lien on such property, while if lands are sold for taxes, the purchaser is given absolute title after five years. In Oregon the interest rate on unpaid taxes is fixed at one per cent a month in addition to two per cent a month after the taxes have been declared delinquent.

GASOLINE TAXES

The taxation of gasoline has had a phenomenal development among the states. In 1927 two other states, Illinois and New Jersey, joined those taxing gasoline. This leaves only two states, New York and Massachusetts, which do not levy some tax on motor fuel.

Many changes were also made in rates. California increased rates from two cents to three cents a gallon as is also the change made in Delaware, Iowa, Michigan, New Hampshire and Vermont. In Georgia the increase was from three and one-half to four cents, the increase to go for school purposes. In Idaho the tax was raised from three to four cents a gallon, as was also done in Maine and South Dakota. The rate in Illinois is two cents, the receipts to go to the road fund, one-half for the state and one-half to be distributed to the counties on the basis of the amount of license fees collected.

In Maryland the tax on gasoline was increased from two to four cents a gallon, a part of the increase in receipts to go to the lateral road fund and a part to a fund for elimination of road crossings. The tax levied in New Jersey is two cents a gallon. Inland waterways are to receive \$90,000 from the receipts and the remainder is to go the highway fund after expense of collection has been deducted. In New Mexico the tax was raised from three to five cents a gallon and the highway commission authorized to issue debentures in anticipation of the receipts.

In Pennsylvania the permanent tax is raised from one to two cents while the temporary tax is continued till June 30, 1929. In Rhode Island the tax is increased from one to two

STATE REVENUES, EXPENDITURES AND BUDGETS

cents. In Tennessee a new division has been established to regulate the gasoline industry. To meet the expenses an additional license of \$10 a year is levied upon wholesalers and one dollar a year for each retail service pump. In Texas the tax was increased from one cent to three cents until September 1, 1928, after which the tax is to be two cents. In West Virginia the increase was from three and one-half cents a gallon to four cents, while in Wyoming it was from two and one-half to three cents.

TAXATION OF MOTOR VEHICLES

Motor vehicles are more and more coming into competition with other common carriers. This makes some equitable plan of taxation essential and a few states are legislating in this direction. A number of states changed their laws in 1927.

Alabama places two sets of fees on trucks, one applying to those using motor fuel which is taxed and one to those which do not. On the former the range is from \$15 to \$1,000, and on the latter from \$265 to \$1,500. Arkansas levies an excise tax of two per cent of the gross receipts on carriers of persons, property and freight, the receipts to go into the highway fund. California provides for the taxation of the tangible property of such transportation companies and provides a fee of \$50 for a certificate of public convenience, without which they cannot operate. In Connecticut motor busses operated with street railways or as subsidiary are to be taxed as the street railway.

In Georgia the basis of registration has been changed from horsepower to weight, while in Maryland no automobile will now be licensed until all other taxes have been paid. Minnesota requires public service corporations to pay motor-vehicle taxes on motor cars using highways as well as the gross earnings tax. Nevada levies special licenses upon all common carriers. There is a \$25 flat fee which increases with carrying capacity and weight. In New Jersey the property tax is removed from motor vehicles while an excise tax of three-fourths of one cent is levied for each mile of operation over New Jersey roads. In

North Carolina the operator's fee on common carriers has been placed at \$5.

PUBLIC UTILITIES AND RAILROADS

Some states have made recent changes in methods of taxing public utilities and railroads. Alabama imposed additional taxes to be used for educational purposes. On railroads, telegraph and telephone companies, and express companies it is two and one-half per cent of gross receipts; on hydro-electric power companies it is two fifths of a mill upon each kilowatt hour of power sold during the preceding year. The flat rate tax on sleeping car companies is increased from \$8,000 to \$20,000 a year.

In New York the only additional franchise tax levied upon elevated, subway and electric surface roads is one of five-tenths of one per cent of the gross earnings. In Ohio there is a slight increase in the excise tax on most public utilities.

In assessing railroads, Maine now uses a rate based on a comparison of gross receipts with net. When the net receipts do not exceed ten per cent of the gross, the tax is three and one-half per cent of the gross, and so on until the tax is five and one-half per cent. In Nebraska steps have been taken to facilitate the assessment of railroads.

SEVERANCE AND TOBACCO TAXES

Both Alabama and Arkansas increased their severance taxes in 1927. In addition Alabama extended the use of a severance tax to quarries and gravel pits. In Montana petroleum was added to the list of mine deposits taxable.

In Alabama a tobacco tax was imposed of fifteen per cent of the wholesale price of all cigars, cigarettes, or cheroots sold within the state. The receipts go into a special educational trust fund. In Kansas a stamp tax of two cents is levied upon each twenty cigarettes or fractional part thereof and of one cent upon each fifty cigarette papers. The annual license for selling cigarettes at retail is \$150 in cities of first and second class, and \$50 in others. The fee is \$300 for selling them on railway

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trains or electric cars. In Tennessee the tobacco tax was reenacted.

STATE BUDGETARY PROCEDURE

Improvement.—There has been little recent legislation in the states which makes any radical change in the administration of the funds. Some form of budget and centralization of control is found in most states and the present procedure is to refine practices which were inaugurated in previous years. The emphasis placed upon economy and efficiency in Federal administration is in many instances being carried over into state practices. It is recognized that much saving can be accomplished in the administration of funds after their appropriation as well as in a close scrutiny of needs before appropriation bills are passed. Two features upon which considerable emphasis is being placed and which are being watched with much interest are the systems of central control of finances and the centralized purchase of supplies.

Central Control of Finances.—The control of finances is of course not the same in all states, yet where central control has been established the aim is much the same. The responsibility for proper administration is centralized in one department or official.

The State of Illinois may be used to illustrate the centralization of control. A director is at the head of

the finance department and has developed a uniform system of accounting to be used in each department. The finance department examines all accounts and approves or disapproves all vouchers of the other departments. All contingencies are met through this department instead of having a separate appropriation to the different departments. This feature alone has resulted in a considerable saving. A list of the anticipated activities of each department, together with their estimated cost, must be presented to the finance department before any of its appropriations become available.

Centralized Purchasing.—Not many years ago the remark was frequently made that if private enterprises were conducted on the same business principles as those used by governments, bankruptcy would be the inevitable result. One marked change from this old policy has been in centralized purchasing, now practiced in nearly every state. The plan is much the same as that used by practically all large business concerns in that requisitions for materials must be made to the purchasing agent. Some states follow the policy of letting contracts to the highest bidder while others, in general, simply buy at the best market price. The economies of buying in large quantities and in keeping in close touch with the different departments have been very gratifying.

CITY FINANCE

BY MERLIN H. HUNTER

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MUNICIPAL EXPENDITURES

Trend.—In 1913 the per capita expenditures of cities in the United States of 30,000 population and over were about \$16.50. In 1905 the per capita expenditures were almost \$48.00. The trend of the different types of expenditures may be seen from the table on the following page.

It will be noted that the increase was much more rapid during the last part of the period than during the

earlier years. A study of several of the larger cities of the United States, moreover, would show a considerable variation in the increase in their expenditures. Thus in New York the per capita expenditures increased about 50 per cent from 1915 to 1925; those in Chicago about 37 per cent; in Detroit about 70 per cent; in Cleveland about 30 per cent; in Baltimore less than 6 per cent; in Buffalo about 55 per cent; while those

CITY FINANCE

GOVERNMENTAL-COST PAYMENTS OF CITIES

(000 omitted.)

Year	Total		Expenses		Interest		Outlays	
	Amount	% increase over 1903	Amount	% increase over 1903	Amount	% increase over 1903	Amount	% increase over 1903
1925	\$2,549,149	395.8	\$1,503,038	401.3	\$198,082	360.1	\$850,028	395.0
1924	2,304,696	364.2	1,410,579	371.1	181,438	321.4	712,678	315.0
1923	2,066,234	327.6	1,323,709	342.1	172,343	300.3	570,182	232.0
1922	1,984,322	310.2	1,248,986	317.2	194,584	351.9	540,752	214.9
1915	996,062	97.0	586,791	96.0	103,387	140.1	305,883	77.9
1909	663,380	51.1	434,009	45.0	71,857	66.9	255,696	48.9
1907	568,779	29.5	393,022	31.3	59,200	37.5	238,849	39.1
1905	498,837	13.6	327,050	9.2	51,898	20.5	182,825	6.5
1903	439,127	....	299,403	....	43,055	....	171,732	....

in San Francisco actually decreased some 8 per cent. It must be remembered that these are per capita figures, and since the cities are increasing in size the percentage of increase in actual expenditures would be more than this.

Increasing Costs.—This rapid and tremendous increase does not necessarily mean that the cities are undertaking new functions or performing the old ones better. Mere increase in population, after cities reach the 30,000 population mark, is shown by the statistics of expenditure to call forth a larger per capita cost for each municipal function. This increase in population may account for a part of the upward trend in expenditures, but a factor of much greater importance is the change in the general price level. If the index of wholesale prices be taken for different periods, using 1913 as a base, then the dollar in 1925 was worth in purchasing power only about sixty-five cents.

This is probably a little low for municipal expenditures since a larger part is for wages and salaries, and such costs do not rise to the level of commodity prices in general. But if the wholesale index be considered, then the actual per capita increase in municipal expenditures from 1915 to 1925 was from \$30 to \$39, or about 30 per cent instead of more than 100 per cent as at first appears. On the basis of this index, the expenditures of many cities show a decline. Thus in New York the decrease was about 6 per cent; in Cleveland 18 per cent; in St. Louis 21 per cent; and in San Francisco 42 per cent.

Functional Expenditures.—The general increase in municipal expenditures is of course but a composite of the increase for the separate items of expenditure. The total amount spent for these items together with the per capita expenditure is shown in the following table. If a study were made on the basis of the size of the city it would, in general, be found

FUNCTIONAL EXPENDITURES FOR CERTAIN YEARS, TOTAL AND PER CAPITA.
(000 omitted)

Item	1925		1924		1915		1903	
General Government	\$119,785	\$3.16	\$111,857	\$3.01	\$ 62,793	\$2.10	\$30,842	\$1.46
Protection to Person and Property	278,056	7.46	259,275	7.10	120,697	4.06	71,021	3.35
Health and Sanitation...	140,376	3.75	130,388	3.55	55,758	1.86	25,808	1.21
Highways	117,693	3.21	109,807	3.07	60,616	2.06	34,209	1.64
Charities, Hospitals and Corrections	84,858	2.19	79,239	2.08	38,285	1.26	18,281	0.86
Schools	502,239	14.10	475,726	13.52	162,332	5.58	80,854	3.86
Libraries	17,379	0.48	15,783	0.44	7,135	0.24	4,068	0.19
Recreation	44,886	1.22	41,819	1.15	20,416	0.68	7,457	0.35

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that per capita expenditures increase with the size of the city, although those for some items more rapidly than others. Thus the per capita expenses for schools, although they increase with the size of cities, do not increase as rapidly as other per capita expenditures.

In 1925, 40 per cent of the total expenditure was for education, 20 per cent for protection to person and property, 10 per cent for health and sanitation, 8.5 per cent for general government, and 8.6 per cent for highways.

MUNICIPAL REVENUES

Increase.—The tremendous growth in municipal expenditures can, in the end, only be met through an increase in revenues. That this increase has been rapid is shown by the amounts received for specific years.

REVENUE RECEIPTS OF MUNICIPALITIES FOR SPECIFIC YEARS

(000 omitted)

Year	Amount	Per Cent of Increase Over 1903
1925.....		
1924.....	\$2,038,512	364.2
1923.....	1,801,302	327.6
1922.....	1,103,666	310.2
1915.....	865,271	97.0
1911.....	751,956	71.2
1909.....	663,380	51.1
1907.....	568,779	29.5
1905.....	498,837	13.6
1903.....	439,127	....

Sources of Revenue.—The sources of municipal revenues have been much the same, although the emphasis placed upon each has changed somewhat over a period of years. The percentage of the total and the per capita receipts from the different sources for specific years is indicated by the following table:

PERCENTAGE AND PER CAPITA MUNICIPAL RECEIPTS

Year	General Property Tax		Other Taxes		Special Assessments		Subventions and Grants		Public Service Enterprises		Other	
	Per Capita	Per-cent- age of Total	Per Capita	Per-cent- age of Total	Per Capita	Per-cent- age of Total	Per Capita	Per-cent- age of Total	Per Capita	Per-cent- age of Total	Per Capita	Per-cent- age of Total
1925 ...	\$40.62	65.6	\$3.62	5.8	\$4.30	6.9	\$3.14	5.1	\$6.19	10.0	\$4.02	6.5
1924 ...	38.59	66.1	3.33	5.7	3.43	5.9	3.12	5.3	6.00	10.3	3.96	6.8
1922 ...	35.85	66.9	2.80	5.4	2.58	5.3	3.13	5.4	4.83	10.4	4.38	7.3
1915 ...	18.73	62.4	2.36	7.8	2.54	8.5	1.26	4.2	3.03	10.0	2.08	6.9
1911 ...	17.37	61.9	2.44	8.7	2.35	8.4	1.30	4.9	2.98	10.9	1.63	5.8
1907 ...	14.64	59.4	2.63	10.6	2.02	8.2	1.18	4.8	2.77	11.2	1.43	5.8
1903 ...	12.98	61.4	2.06	9.8	1.60	7.6	0.91	4.3	2.42	11.5	1.16	5.5

Under the item "other taxes" is included the many taxes which are not of the nature of the general property tax. Such are those levied upon corporation stocks and bonds, or those levied upon life insurance companies. Any inheritance or income receipts are also so classed. In addition, especially in the Southern cities, there are a large number of levies on business organizations.

The items under public service enterprises include the net returns from municipally-owned plants such as those supplying water, gas, or electricity. The most general of the municipally-owned plants are those for supplying water. In general, the

statistics of revenue from these enterprises are inaccurate since no good plan of cost accounting is in force. The enterprises are frequently not credited with all the revenue that actually has arisen within them or conversely have not been debited with all the expenses which should be allocated to them.

Tax Rate upon Property.—Since cities rely so extensively upon property as a source of revenue, a comparison of the rate of assessment among cities is important. To make a comparison, however, of the rate actually used would be of little significance, since the percentage of assessed valuation of property to its

STATE TAX LEGISLATION

true value varies to such an extent. If one can estimate the extent to which under-assessment is practiced and will make allowance for this in arriving at the tax rate, then he can have something like an accurate comparison of the tax burden which different cities levy upon property.

In the *National Municipal Review* for December, 1925, a calculation is made of the actual tax burden upon property in different cities of the United States and Canada. The extremes in the United States from \$63.85 per \$1,000 value in Fresno to \$10.32 per \$1,000 value in Little Rock. The rate on \$1,000 value in other cities was: New York, \$24.75; Chicago, \$31.50; Toledo, \$15.75; Scranton \$33.75.

Municipal Taxes on Automobiles.—The pressure for more funds has caused cities to seek new sources. One which some cities have found remunerative is to levy a special tax upon automobiles, or rather upon vehicles of which automobiles are the most important. In some States cities are specifically forbidden to levy any such taxes, in others, authorization is found, while in one-third of the States no legislation is found which covers the situation.

The possibilities of the vehicle tax as a revenue producer may be seen by observing its use in certain Illinois cities. The levy is usually in the form of a license payment which legalizes the operation of the vehicle within the city. In Chicago, Evanston, Oak Park, and Willamette the rates range on motor vehicles from \$3.00 (motor cycle) to \$35.00. In 1926 the city of Chicago collected from its "wheel tax" alone more than \$4,180,000.

MUNICIPAL INDEBTEDNESS

Rapid Growth.—One of the alarming features of municipal finance, especially in recent years, has been the rapid growth in indebtedness. The indications are that this would have reached even larger proportions if debt limitation provisions had not been in force in a number of States. The following table shows the growth in the actual and per capita gross indebtedness of cities from the year 1903.

TOTAL AND PER CAPITA INDEBTEDNESS
OF CITIES
(000 omitted)

Year	Amount	Per Capita
1925	\$6,108,873	\$172.09
1924	5,580,635	159.06
1919	3,678,254	117.51
1915	3,147,762	109.13
1913	2,731,183	97.16
1909	2,200,176	87.63
1905	1,609,158	73.23
1903	1,395,710	66.88

Per Capita Debt.—In individual cities the per capita indebtedness ranges from about \$270 for Atlantic City to a little less than \$9.00 for Quincy, Illinois. A part of this gross indebtedness is offset by an accumulation of sinking fund assets, although the tendency in recent issues of bonds has been to discard the sinking fund method and use serial bonds. Another factor is that a part of the indebtedness is to some extent self-liquidating. Of this type are the bonds issued for income-producing property such as water works. At best, however, the indebtedness is placing a huge burden on the future taxpayer and efforts to curb its rapid increase may be looked upon with favor.

STATE TAX LEGISLATION

BY BEULAH BAILEY

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Administration in States.—During 1927 all of the states but Kentucky, Louisiana, Mississippi, and Virginia were in regular session and Virginia was in extraordinary session. A Tax

Commission was created in Arkansas in 1909, abolished in 1923, and its duties transferred to the Arkansas Railroad Commission. Now, in 1927, the law of 1923 has been repealed and

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a new commission consisting of three members appointed for a term of eight years, has been created for a period of thirty-two years. In Michigan the State Tax Department was abolished and the State Tax Commission, consisting of three members created. The term of office is six years. In New Mexico the Commission is given the power of assessing live stock and jurisdiction over the collection of all delinquent taxes. An office of Special Tax Attorney is created for the latter work and for each county an office of Delinquent Tax Collector.

In Oregon, the 1927 legislature passed a law giving the Tax Commission power to have any county board of equalization raise or lower the valuation of any taxable property or to add property to the assessment list. In June this came before the people in an initiative petition and was lost. In South Dakota either the Director or the Assistant Director of Taxes must be a lawyer and shall administer the inheritance tax. Tennessee is the only state that has taken over the regulation of the gasoline industry. It is under the supervision of the Division of Motors and Motor Fuels of the Department of Taxation and Finance. In Virginia the administration of the inheritance and the transfer tax will upon March 1, 1928, be transferred from the Auditor of Public Accounts to the Department of Taxation.

Special Investigating Commissions.—Nine states made provisions for special study of their respective tax problems. The states are Arkansas, California, Illinois, Maryland, Massachusetts, Minnesota, New Hampshire, North Carolina and Texas. The New York State Joint Committee of Taxation and Retrenchment will continue their investigations. In Iowa \$10,000 of the money appropriated for the State College was designated by the Legislature to be used for a study of state and county taxes. There is a favorable tendency toward inter-state cooperation and consultation on the part of those carrying on these special studies.

The reports of special commissions

published during 1926 are, "Tax Exemptions in State of New York," 263 p.; "Wisconsin Legislature Report of the Interim Committee on Administration and Taxation," 71 p.; "Report of the Ohio Joint Legislative Committee on Economy and Taxation," 270 p.; and "The Final Report of the Tax Commission of Pennsylvania," 131 p.

Assessment.—Formerly in Illinois the law required property to be assessed at one-half of its full value although the assessments have averaged about 45% of value. A 1927 law increases the assessment to full value. Illinois is a devotee of the General Property tax. The bankers of Illinois feel that for the present this increased assessment is going to react unfairly on the taxing of banks and intangibles. They will at once be taxed on 100% of face value while it will be some time before the assessed value of real property is raised to full value.

Banks and Intangibles.—The U. S. Supreme Court held in the State of Minnesota v. First National Bank of St. Paul that the tax on Minnesota bank shares was greater than the tax on money and credits, mortgages being held as moneyed capital coming into competition with national banks. Under § 5219 of the U. S. Rev. St. this cannot be and hence the Minnesota Bank Tax is illegal. For the time being it is paid under protest. It is thought that this decision of the U. S. Supreme Court will affect the legality of the bank tax of about 24 states.

Wisconsin's provisions for taxing national bank shares were held invalid at the same time the Minnesota case was decided, and for about the same reasons. Wisconsin at once enacted an income tax on the incomes of state and national banks and trust companies. This tax is in lieu of all other taxes except the tax on real property. In North Dakota every bank and trust company shall annually convert into a surplus fund at least 50% of its net earnings. This shall be done until the surplus equals 100% of the capital stock. This surplus is exempt from all taxation.

Nebraska amended its intangible

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tax law in order to comply with § 5219. All moneyed capital coming in competition with banks is now taxed at the same rate as bank stock. In Oklahoma intangibles are classified and a special tax of $\frac{1}{2}$ of 1% is levied upon them. Kansas increases the millage tax on intangibles from 2.5 mills on a dollar to 5. An alternative stamp tax of $\frac{1}{10}$ of 1% per year is levied upon the face value of secured debts.

Forestry Taxes.—Timber lands were classified in Minnesota and Wisconsin and a yield tax imposed. In Minnesota classified lands are to be taxed at 8 cents on each dollar of assessed value of the land, which is $\frac{1}{3}$ of the true value. This is exclusive of the timber. The yield tax is 10% of true value of timber. In Wisconsin, for the land itself counties receive 10 cents per acre from the state, 10 cents from the owner. The yield tax is 10% of stumpage value.

Gasoline Tax.—Illinois and New Jersey each levied a gasoline tax of 2 cents per gallon. The receipts from the tax go to the highways except \$90,000 in New Jersey which goes to inland water ways. In that state the tax is on gasoline used in motor boats as well as motor vehicles. Twenty-two states increased the rate during 1927. There are now 12 states with a 2-cent tax, 15 with a 3, 1 with a $3\frac{1}{2}$, 12 with a 4, 1 with a $4\frac{1}{2}$ and 5 with a 5. The day of the 1-cent tax is no more. Only two states, Massachusetts and New York, have no gasoline tax. In Massachusetts a bill passed both Houses but was vetoed by the governor. In New York many bills have been introduced but, so far, none have weathered the legislative storm.

Income Tax.—Once again Oregon tried to have an income tax, but the measure was rejected by the people. The General Assembly of Indiana passed a resolution for an amendment to the Constitution providing for an income tax. Missouri repealed eight sections of its income tax law and substituted new sections which are about the same in substance but not in form. Delaware made minor changes in administration. The tax may now be paid in 4 equal installments. Formerly in Wisconsin the

tax was on all income, now it is on all average net incomes. To obtain the average the net incomes and losses are reckoned over a period of 3 years. Wisconsin has made rather a novel departure from the customary method of taking exemptions. The exemption is taken from the amount of tax rather than the measure of the tax. The personal exemptions are for an individual \$8, for head of family \$17.50, and for a dependant, \$3.

Inheritance Tax.—Arizona, Indiana, Maryland, Nevada, North Dakota, Vermont and Wyoming went on record favoring the repeal of the Federal Estate Tax. The eighty per cent federal credit was this year taken up by California, Colorado, Delaware, Massachusetts (last year's law was temporary), Missouri, Montana, New Jersey, North Carolina, Ohio, Oklahoma, Pennsylvania and Vermont. There are now twenty-one states and the District of Columbia enjoying reciprocity in the taxation of intangible personalty of non-resident decedents. The states which passed legislation to that effect this year were California, Illinois, Maine, Maryland, New Hampshire, Ohio and Oregon. In July the New York Court of Appeals held the flat rate tax upon non-resident decedents unconstitutional. The reciprocal provision was in the same law and for the present that is inoperative, and the tax is being paid under protest. Georgia enacted the Matthews flat rate plan. North Dakota repealed its inheritance tax and substituted an estate tax. The rates have been increased in New Jersey and Oklahoma, especially in the higher brackets.

Railroad Taxes.—Texas repealed the occupation tax based upon the gross receipts of street railways. New York reduced the additional Franchise tax on elevated, subway and electric surface railroads from 1% of gross earnings and 3% on declared dividends in excess of 4% upon paid up capital to $\frac{1}{10}$ of 1% of the gross earnings in the state. Formerly in Maine the measure of the tax on railroads was gross receipts, now it is a comparison of the gross receipts with the net.

VIII. PUBLIC FINANCE AND TAXATION

PROPERTY AND LAND-VALUE TAXATION

By JENS P. JENSEN

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LEGISLATION

State Enactments.—During 1927 the legislatures of 44 states were in session and 37 of them enacted tax legislation. Nine states provided for special tax investigation commissions, most of them legislative interim organizations. Appropriations, however, were seldom very liberal, and the reports, which must be made shortly may not be of creative importance.

Intangibles.—The United States Chamber of Commerce, in its Referendum No. 49, recommended, through its committee, "that intangible personalty be taxed on the basis of earnings, in lieu of other taxes." The vote of the constituent chambers of commerce stood 206½ for and 311½ against. It was also "recommended that for any ad valorem tax intangible personalty should be classified and the rate should be low with reasonable relation to earnings." The vote of 2208½ to 165½ showed a decisive approval.

The actual achievements in the form of legislation and administration are meager. North Carolina and Washington will vote in 1928 on amendments to authorize classification of property for taxation. Texas rejected a classification amendment; and Oregon, by defeating the income tax proposal, retained intangibles on the general property tax list.

Kansas raised the rate on intangibles from 2.5 to 5 mills, in the belief that intangibles were not contributing a fair share. The law also attempted to define intangibles so as to avoid conflict with Section 5219 of U. S. Revised Statutes, governing taxation of national banks. A new class of intangibles was created consisting of bonds of other states and foreign countries, subject to an annual registration tax of 1 mill. Nebraska also tried to avoid conflict with Section 5219. Oklahoma adopted a 2 mill tax on intangibles, except such as compete with the shares of

national banks. Connecticut, New York, and Vermont adopted legislation that affected the status of some intangibles.

Recording Tax.—The Michigan recording tax was held not to constitute double taxation when a railroad was also required to pay a license fee and to secure the approval of the state utilities commission. The fee was not a tax unless excessive. The recording tax affected interstate commerce so incidentally as not to constitute a burden thereon (212 N.W. 78). In a Montana case (249 Pac. 853) "conditional sales" contracts were held to be taxable credits, even though title did not pass to the purchaser until after full payment and even though the automobiles were taxed to the purchaser.

Differentiation.—Alabama, Arizona, and Montana either increased the rate of their severance taxes or extended their scope, or both. The West Virginia sales tax on national gas was held unconstitutional by the state supreme court, as being a burden on interstate commerce (135 S.E. 582). The U. S. Supreme Court, however, upheld the tax (May 16, 1927) as being a production tax and not a burden on interstate commerce so long as only the value produced within the state was taxed although the value of the product sold outside might be considered for the purpose of determining the value within. On February 12, 1927 (Swiss Oil Corp. v. Shanks), the U. S. Supreme Court sustained the Kentucky state court in holding the Kentucky 1% production tax on oil produced valid, being neither a burden on interstate commerce nor invalid under the 14th amendment.

Timber.—Minnesota in 1926 adopted a constitutional amendment authorizing the legislature to exempt growing timber from property taxes, and impose a yield tax upon the product, when severed. The legislature enacted the necessary legislation in

1927. Louisiana adopted a similar amendment in 1926, extending the reforestation contract to 50 years. Michigan and Wisconsin amended their laws so as to apply more fully the same principle of deferred severance taxes.

GROSS EARNINGS

Maine changed the basis for computing the gross earnings tax on railroads. The minimum rate of $\frac{1}{2}$ of 1% was applicable when the earnings per mile did not exceed \$1,500. The tax rate increased by $\frac{1}{4}$ of 1% for each additional \$400 earnings per mile, until the maximum rate of $5\frac{1}{2}$ % was reached. The new rates are graduated on the basis of the ratio of the net earnings to the gross earnings. The minimum rate of $3\frac{1}{2}$ % of the gross earnings applies when the ratio does not exceed 10%. For each additional 5% of the ratio the tax rate increases by $\frac{1}{2}$ of 1% until the maximum rate of $5\frac{1}{2}$ % is applied when the ratio exceeds 25%. In a recent case (134 Atl. 59) it was decided that for the purpose of determining the mileage of railroads, leased lines should be included, even though their use was shared jointly with other roads.

Express companies in South Dakota pay 6% instead of 5% on gross earnings. New York substituted a $\frac{5}{10}$ of 1% gross earnings tax on electric railways. Alabama imposed various additional taxes on selected public utilities for educational purposes. Ohio increased the taxes on sleeping car, freight line, and equipment companies from 1.2% to 1.35% of capital stock in the state; and the gross receipts tax of 1.2% to 1.35% on the interstate business of certain public utilities. Vermont raised the optional tax on telephone property. Although Maryland abolished the 2% gross receipts tax on freight line companies, and California in 1926 by legislative referendum reduced the gross receipts tax from 7% to $5\frac{1}{4}$ % on steam railroads less than 250 miles in length, the tendency toward higher rates is strong.

California in 1926 extended the gross earnings tax, at the rate of $4\frac{1}{4}$ %, to common carriers on the

public highways. In a Minnesota case (211 N.W. 467) the court held that public service corporations paying gross earnings taxes were not required to pay motor vehicle taxes on motor vehicles using the public highway, the gross earnings taxes being in lieu of all other taxes. A 1927 act requires them to do so. Oklahoma removed from the general property list all property engaged in the manufacture of lint cotton, and imposed instead a tax of $\frac{1}{10}$ of 1% of the gross value produced.

EXEMPTIONS

Trends.—Despite the warnings of tax commissions against excessive exemptions, additional exemptions continue to be made. The two most common forms of these exemptions are (1) the property of veterans or their dependents and (2) property used in industries which it is desired to encourage. Connecticut, Idaho, Iowa, Maryland and Rhode Island in 1927, and California in 1926 extended more liberal exemptions to veterans. Very little activity is evident for the extension of exemption privileges for reasons of religion or charity. Nevada exempted property to the extent of \$7500 for each chapter house of fraternities of the state university. But Texas in 1926 subjected to taxation, except for state purposes, all agricultural or grazing school lands owned by any county.

Textiles.—South Carolina ratified an amendment adopted in 1926 to exempt property devoted to textile industries in specified counties for a period of years, from all taxes except for school purposes. Similar exemptions were made by Arkansas, California and Louisiana in 1926. In 1927 the list was joined by Maryland, New Hampshire, New Jersey and Rhode Island. New York exempts real property of state bar associations. North Carolina adds to the exempt list the property of patriotic and historical associations. In New Mexico the \$200 exemptions to the head of a household may now consist of real as well as personal property. Maryland exempts the real and personal property of chambers of commerce.

Shipping Board Property.—A recent Federal case is of some interest (17 Fed., 2nd, 40, C.C.A., Pa.). Property belonging to the U. S. Shipping Board Emergency Fleet Corporation is exempt because the property, though owned by a nominally private corporation, is essentially owned by the federal government, from which the funds were all derived. The corporate fiction does not here avail. The U. S. Supreme Court, Nov. 23, 1926, reversed the Minnesota Supreme Court (202 N. W. 436) in holding that logs in movement from a river landing to its loading place on the tax day, was in interstate commerce and therefore not taxable. (See *THE AMERICAN YEAR BOOK*, 1926, p. 336). In an Oklahoma case it was held (250 Pac. 120) that an exemption granted for a period of years, implied a contract which the legislature could not disregard when the exemption had been relied upon in the choice of a site.

ASSESSMENT AND ADMINISTRATION

Commissions.—The process of centralizing the assessment or the control thereof continues. North Dakota is to vote in 1928 on the question of extending the duties of the board of equalization to the assessment of electric light, heat and power companies, and certain transportation companies. In Michigan and Arkansas the organization of the tax commission was improved. The Nevada tax commission takes over, from the county assessors, the task of assessing the net proceeds of mines. In New Mexico the powers of the commission are extended, especially for the purpose of collecting delinquent taxes. The Oregon commission may now order counties to raise or lower the valuation. The New York commission must approve of the local assessments of state owned lands. In a New Jersey case (135 Atl. 61) the State Supreme Court refused to exercise its authority to ascertain value of property for taxation, holding that its authority was not mandatory, that the Board of Taxes and assessments was properly constituted for that purpose. The Nebraska commission is to prepare an abstract of its procedure in

assessing railroad property, and to show how such valuation was arrived at. Procedure for appeal is provided for but no injunction restraining the collection of taxes on the valuation made by the commission can be granted.

Railroad Property.—The difficulties involved in the assessment procedure of railroad and similar property is well demonstrated in the two following cases. In one case (16 Fed., 2nd., 995, C.C.A.) a Kentucky pipe line company had been assessed by capitalizing its net average income at 7%. This it claimed to be unfair, since its oil lands, upon which the value of its property depended, would be depleted in 20 years. The court held this method to be unfair. In another case (*Southern Railway v. Kentucky*, decided by U. S. Supreme Court, April 11, 1927) assessment on a proportionate mileage basis of the property of a subsidiary corporation, controlled by a foreign corporation, but used as part of a system, was arbitrary, and amounted to importation of value for taxation. The court here reviewed at length the decisions of the past governing assessment on the basis of the unit rule.

Illinois raised the assessment ratio from 50% to 100% of the full value; and the compensation of the local assessor was increased. In Montana realty is to be assessed biennially instead of annually. Minnesota assessors were directed specifically to recognize the effect of nearness of roads and streets upon the value of realty, and they were given direction for assessing property of transient merchants and the immediate collection of taxes thereon. North Carolina also improved the machinery for local assessment.

Uniformity.—Arkansas enacted a special law governing the assessment in counties having between 6500 and 7500 population. This runs counter to a recommendation in Referendum No. 49 of the U. S. Chamber of Commerce "that all jurisdictions levying the same kind of tax should have uniformity in computation and administration and uniformity in report." The vote was 2400 to 26, or

INCOME TAXES

practically unanimous. But special legislation couched in general language is still common. The practice of non-uniform assessment has repeatedly gotten Arkansas into trouble. In one recent case (286 S.W. 968) the Missouri Pacific objected to a 100% assessment in one county, under the discretionary authority of the tax commission, when elsewhere a 50% basis was used. The court held that the uniformity rule of the constitution was in this instance violated.

Another recommendation was made by the committee of the chamber, to the effect "that each state should have an agency with power upon petition, to prevent unwise expenditures by local governments." This was based upon the present practice in Indiana. The vote was favorable, but only 1503¼ to 880½. There is yet strength in the "home rule" doctrine. Connecticut authorized the tax commissioner to audit the books of certain small towns.

COLLECTION AND DELINQUENCY

Unpaid Taxes.—Delinquent taxes, while probably not increasing relatively, have increased rapidly absolutely, partly owing to local depressions, and partly owing to the rapid increase of property taxes. The Ohio Tax Commission reports, for example that the delinquent taxes for 1925 and before, amounted to nearly 10% of the 1926 tax duplicate. In one county, due of course to peculiar conditions, the delinquencies amounted to 54.7%. In Cuyahoga county, including the city of Cleveland, 20% were delinquent. The condition is of course worse in some other states,

although data are not generally available to show the extent of delinquency.

Unpaid Taxes.—Legislation was enacted in Arizona, Connecticut, Idaho, Iowa, Maryland, Minnesota, Montana, New Mexico, North Carolina, Oregon, Pennsylvania, Texas and Utah, designed either (1) to facilitate the disposal of real and personal property on which taxes were unpaid, or (2) to validate taxes unpaid and contested because of errors in the statute or the administration. In Iowa a 10 year limit was set to the period within which taxes were a lien upon property. Formerly there was no limit, and a case arose in which collection was sought for taxes erroneously unpaid for over 30 years. A Minnesota case (211 N.W. 945) holds that taxes are a lien upon property until paid, and that the lien is enforceable against the estate of the decedent for taxes delinquent during his lifetime. In Maryland the practice of refusing to issue licenses to motor vehicles until all property taxes due are paid was extended to the entire state, having been limited to Baltimore.

Tax Limits.—Oregon rejected a constitutional amendment to limit the state tax, but limited the amount of any millage tax on property in any political subdivision to the previous levy plus 6% thereof. Ohio, the experiment station of tax control by means of statutory tax rate limitation, raised the limit of special tax levies from 10 to 15 mills. Arkansas raised the maximum tax rate for school purposes from 5 to 18 mills. The Nebraska road district rate was raised from 2 to 3 mills.

INCOME TAXES

BY MABEL NEWCOMER

PROFESSOR, VASSAR COLLEGE

FEDERAL INCOME TAX

Rates.—The income tax provisions of the Revenue Act of 1926 remained in force during the year 1927. Normal tax rates are 1.5% on the first \$4000 of taxable income, 3% on the

next \$4000, and 5% on all over \$8000. The surtax rates begin with 1% on net income in excess of \$10,000 and reach a maximum of 20% on net income in excess of \$100,000. A credit of 25% of the normal tax is

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allowed on all net income under \$5000 and on "earned" net income under \$20,000. Personal exemptions are \$1500 for single persons, \$3500 for heads of families, and \$400 for dependents. The exemption for estates and trusts is \$1500. The corporation income tax rate is 13.5 per cent.

Revenue.—The reduced rates on personal income resulting from the 1926 law were in effect for all four quarterly payments for the fiscal year ended June 30, 1927, as compared with only the March and June payments for the year ended June 30,

1926. In spite of this there was a material increase in the returns from the personal income tax. The rate on corporation income was one-half of one per cent higher than during the preceding year, being 13.5% for the March and June payments and 13% for the September and December payments, as compared with 13% for March and June and 12.5% for September and December of the fiscal year 1925-26. The increase in the yield of corporation taxes, consequently, exceeded the increase in the yield of the personal income tax by a wide margin.

REVENUE FROM FEDERAL INCOME TAX

(In thousands of dollars)

Year	Corporation	Personal	Total	Per Cent of All Federal Taxes from Income Tax
1926-27	\$1,308,013	\$911,940	\$2,219,953	63.1
1925-26	1,094,980	879,124	1,974,104	69.6

The income tax collections for the first quarter of the year 1927-28 were seventeen million dollars less than the collections for the same quarter of the preceding year.

Proposed Revision.—The widespread demand for further tax reduction has taken the form, as far as the income tax is concerned, of demand for lower corporation tax rates. There has also been some demand for lower surtaxes in the middle brackets. The latter reduction has not been recommended by the House Ways and Means Committee. This Committee is recommending, however, reduction of the rates on corporation income from 13½% to 11½%, and an increase in the exemption for corporations with income of \$25,000 or less from \$2000 to \$3000.

STATE INCOME TAXES

Revisions.—No states have been added to the group of those levying income taxes this year, nor has any state levying such a tax given it up. Several states have made important revisions in their laws, however. The South Carolina legislature passed a new income tax law, retroactive for the year 1926. Rates on personal

income begin at 1% and reach 5% on incomes in excess of \$15,000. Personal exemptions for married persons and dependents remain unchanged, but the exemption for single persons has been increased to \$1500. The corporation income tax rate has been reduced to 4 per cent without any exemption.

Wisconsin.—The Wisconsin income tax law has also been revised. The rates of the tax remain unchanged but the basis of personal exemptions has been changed. Instead of exempting a certain amount of income in advance of computing the tax, individuals may deduct certain sums from their taxes after such taxes have been computed. The sums deductible are \$8 for single persons, \$17.50 for married persons, and \$3 for each dependent. Another and more important innovation in the law is the change in the base on which the tax is computed. Instead of taking the net income for the current year as the base of the tax, the net income (or loss) on the current return is to be averaged with the net incomes (or losses) for the two preceding years to arrive at taxable income.

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Other States.—The New York income tax law has been amended to provide that shareholders may receive securities in a reorganization without having to pay a tax. This conforms to the federal law. The Missouri income tax law and the Massachusetts corporation income tax law have been amended to simplify and clarify administration. None of the other states with income taxes has made any important changes in its laws.

Further attempts to pass income tax laws in states without such a tax were made in several states. The Oregon legislature again referred an income tax amendment to the people at a special election on June 28, 1927. The amendment was defeated by a large majority. In Indiana the General Assembly adopted the same amendment, providing an income tax, that was defeated in 1926. This amendment will have to go before the session of 1929 before it can be submitted to the voters.

The present status of state income taxes is as follows: Nine states, Massachusetts, Mississippi, Missouri, New York, North Carolina, North Dakota, South Carolina, Virginia and Wisconsin, are taxing both personal and corporation income. Three states, Delaware, New Hampshire and Oklahoma, are taxing personal income only. And two states, Connecticut and Montana, have taxes on corporation income only. All of these states excepting Delaware, Massachusetts, New Hampshire and North Dakota tax such income of non-residents as they can reach. New York, North Carolina and South Carolina, however, credit non-residents with the amount of any income tax paid in the state of residence if such state allows similar credits. All of these states but Mississippi, South Carolina and Wisconsin tax residents on income derived from sources outside of the state, with only Missouri and North Carolina allowing credits for income taxes paid in other states.

STATE PERSONAL INCOME TAX EXEMPTIONS AND RATES

State	Personal Exemptions			Rates Percentage	Amount of In- come to Which Highest Rate Applies
	Married Persons	Single Persons	Dependents		
Delaware	\$2,000	\$1,000	\$200	1-3	\$10,000
Massachusetts	2,500 ¹	2,000	250	1½-6 ²	
Mississippi	2,000	1,000	200	1-5	25,000
Missouri	2,000	1,000	200	1	
New Hampshire	200	200		0 ³	
New York	3,500	1,500	400	1-3	50,000
North Carolina	2,000	1,000	200	1¼-5	15,000
North Dakota	2,000	1,000	300	1-6	10,000
Oklahoma	4,000	3,000	200-500	¾-2	25,000
South Carolina	2,500	1,500	400	1-5	15,000
Virginia	2,000	1,000	400	1½-3	5,000
Wisconsin	0 ⁴	0 ⁴	0 ⁴	1-7 ⁵	12,000

¹ Exemptions apply to earned income. There is a flat exemption of \$300 on unearned income.

² Varies with source of income.

³ Applies only to income from intangibles. Rate varies with average of general property tax on all tangible property in state which is about two and one-half per cent.

⁴ In place of exemptions deductions are allowed from the tax after it has been computed. These deductions are \$17.50 for married persons, \$8 for single persons, and \$3 for dependents.

⁵ These rates include surtax.

Corporations.—The corporation income tax rates are flat rates of 1% in Missouri and Montana, with an exemption of \$2500 in the latter state, 2% in Connecticut, 2½% in Massachusetts, 3% in North Dakota and Virginia, 4% in North Carolina and

South Carolina, and 4½% in New York. Mississippi has a graduated tax of 1% to 5%, the maximum being applied at \$25,000, and an exemption of \$1000. Wisconsin has rates of 2½% to 7%, the highest rate being applied to all income over \$7000.

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All of these are taxes on net income, but net income is variously defined. In some states the tax does not apply to all corporations.

REVENUE FROM STATE TAXES

In Delaware the greater part of the proceeds of the income tax are credited to the state school fund. In Massachusetts the state retains the temporary additional tax and enough of the regular tax to cover the cost of administration. The remainder is

distributed to the local districts. In New Hampshire, also, the proceeds over the cost of administration are turned over to the towns and cities. In New York half of the personal income tax and one-third of the corporation income tax are distributed to the local districts. In Wisconsin the surtax is used for special state expenditures, but only 40% of the normal tax is kept by the state. In the other states the proceeds are all kept for state purposes.

REVENUE FROM STATE TAXES ON NET INCOME

(In thousands of dollars)

State	Amount for State Purposes	Per Cent of State Taxes	Amount for Local Purposes	Per Cent of Local Taxes
Connecticut ¹	\$ 2,587	10.2		
Delaware ²	928	22.9		
Massachusetts ³	1,014	3.5	\$26,327	10.3 ⁴
Mississippi ⁵	1,789	16.1		
Missouri ⁶	4,336	25.9		
Montana ⁷	289	9.2		
New Hampshire ¹	10	.1	488	2.2 ⁴
New York ¹	56,022	34.7	40,853	5.0 ⁴
North Carolina ⁷	6,084	54.3		
North Dakota ⁷	558	7.0		
Oklahoma ⁷	336	1.8		
South Carolina ⁵	1,560	15.8		
Virginia ⁷	1,751	6.9		
Wisconsin ¹	8,596	24.5	10,179	8.5

¹ Fiscal year ending June 30, 1927.

² Fiscal year ending Oct. 31, 1926.

³ Fiscal year ending Nov. 30, 1926.

⁴ Approximate.

⁵ Fiscal year ending Dec. 31, 1926.

⁶ Fiscal year ending Sept. 30, 1926.

⁷ Fiscal year ending June 30, 1926.

CORPORATION AND BANK TAXES

BY JENS P. JENSEN

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CORPORATION TAXES

Franchise Tax Basis.—The Illinois corporate franchise tax law which required the tax to be based upon the authorized stock was held invalid as to foreign corporations because authorized stock was not a reasonable basis when a substantial part of that stock was not issued; because failure to include intangible property in determining the fraction of the total stock that was allocable to Illinois; and because, in case of no-par stock, \$100 was taken arbitrarily as the value for purposes of the tax (*O'Gara Coal Co. v. Emmerson*, Illinois Supreme Court, April 20, 1927).

The legislature, being in session at the time of the adverse ruling, a new law was rushed through, with an emergency clause to save the year's taxes; in which issued capital is substituted for authorized; no-par stock is valued at what was received for it; and intangible property is included for the purpose of determining the share of the total stock allocable to Illinois.

Capital Stock Valuation.—Pennsylvania, in reducing the organization fee from $\frac{1}{3}\%$ to $\frac{1}{6}\%$ of authorized capital stock, provided that no-par stock shall be taken at its "stated" value instead of \$100. California in-

vited trouble by placing an arbitrary value of \$10 on no-par stock; Idaho, by placing the value at \$100; and South Carolina, by placing the value at \$100 unless a different value is shown to the satisfaction of the officer in charge. In Delaware the organization tax was made $\frac{1}{2}$ cent for each of the first 20,000 shares, and $\frac{1}{4}$ cent for each share in excess thereof, which may or may not be satisfactory. Ohio provided a similarly graduated entrance fee for foreign corporations on the portion of the authorized stock allocable to the state, and also a graduated organization fee for domestic corporations. Oklahoma followed suit with a similar provision for charter renewal fees on authorized capital stock. In a Virginia case (136 S. E. 666) it was held that the amount of authorized capital stock to be used as the basis for the tax should be obtained from the books of the corporation and not from the charter, since the corporation had authority to reduce its capital without instituting proceedings.

Advantages to Foreign Corporations.—The disapproval by the Federal courts of the use of authorized stock, or of a statutory value of no-par stock in case of foreign corporations (See AMERICAN YEAR BOOK, 1925, p. 339, and 1926, p. 342) leads to apparent discrimination against domestic corporations. This may be seen in the new franchise tax law, the Aigler Act, of Ohio. Although the Federal decision affected only foreign corporations, the tax on domestic corporations was also changed, for the purpose of some degree of equality. The tax, increased from $\frac{1}{12}\%$ to $\frac{1}{8}\%$ for 1927 and 1928, and to $\frac{1}{40}\%$ for each year thereafter, is for both domestic and foreign corporations based upon the Ohio proportion of their capital stock; but for the former it is assumed that at least 60% of the corporation's capital stock is employed in the state, and the interstate business originating or terminating in Ohio is deemed to be Ohio business for the purpose of determining the proportion of the total capital stock allocable to Ohio. The discrimination is more clearly seen in Alabama, whose new law temporarily

raised the rate from \$1 to \$2 per \$1000 of authorized capital stock; but for foreign corporations the tax is based on the proportion of the capital employed in the state, while in case of a domestic corporation, the entire capital is the basis.

Discrimination.—A different form of discrimination appears in the new law of North Carolina, as it did in part in the old. The tax of $\frac{1}{10}$ of 1% on domestic corporations is based upon the total amount of outstanding and subscribed stock plus surplus and undivided profits; or upon the assessed value of all its property in the state, whichever of these figures is the larger. For foreign corporations the tax is the same except that only that part of its stock, surplus and undivided profits is taken which is represented by property owned, used or employed, or business transacted in the stock. The advantage to the foreign corporation may be material.

While some of the foregoing changes and others not described will probably reduce the franchise taxes of some corporations, especially of foreign corporations having no-par stock, there is general evidence of a disposition to increase the tax. California increased the franchise tax rate on domestic and foreign business corporations from 1.6% to 1.8%. The change in the basis for the Maryland franchise tax was from capital stock issued and outstanding to "capital stock issues outstanding, and/or subscribed for." The new New Hampshire law regulating the registration of foreign corporations requires a fee of \$25 of the qualifying corporation. Formerly no fee was payable.

Fiction of Corporate Entity.—In an earlier Pennsylvania case (251 Pa. 12) it was held that where a Pennsylvania corporation owned all the stock of subsidiary corporations whose property was within the state, such stock should not be included for the purpose of determining the franchise tax. A recent case (134 Atlantic 438) reversed this decision. But the legislature promptly provided that such shares were to be considered as having a situs without the state, thereby avoiding double taxation.

DELINQUENCY

Doing Business in a State.—An interesting case involving tax delinquency and the question of doing business (292 S. W. 98) was recently decided in Arkansas. Defendant, having outstanding \$450,000 of capital, owned cut-over land in Arkansas worth \$92,500 and had no other assets elsewhere. It conducted all sales and other business in Illinois. It had for years not paid the annual tax of $\frac{1}{40}$ of 1% of its capital stock (or the proportion allocable to Arkansas, which in this case was all of it). The state claimed an annual tax of \$450. Defendant claimed it was not doing business in the state and was therefore not taxable; or if taxable then to the extent of \$92,500 only. But the tax was held to be not a property tax, and to be properly fixed at \$450. Defendant had exercised its corporate franchise in the state and had never given it up. If it so desired, the court said, it could avoid the tax by surrendering its privilege of doing business in the state, and permitting a trustee to hold its property. But Arkansas could very easily prevent such avoidance by amending the franchise law so as to make the tax applicable to the holding of property in the state, as New York has recently done.

State Claims.—There is evidence showing increased diligence in protecting the state franchise tax claims. In New York a lien for franchise taxes against a bankrupt corporation, to be paid out of the sale of assets of the corporation, was held superior to the liens of judgment creditors, whether the judgments were docketed before or after the assessment of the tax (17 Fed., 2nd., 78, C.C.A.). Tennessee amended her franchise tax law so as to authorize the Commission of Finance and Taxation to issue distress warrants for the collection of delinquent taxes from corporations.

Avoidance and Penalties.—The most common form of delinquency is for a foreign corporation to do business in a state without qualifying by registration and payment of the tax required. It is not always easy to detect such violations; but apparently the enforcement of the law is becoming

more successful. Pecuniary penalties, in a great variety of form, and with varying severity, are the most common forms of inducements. More severe, when enforced, is the forfeiture by a corporation of its right to sue and to enforce its contracts, and to the use of the statute of limitations in suits of defence. The officers or agents may be liable; and a domestic corporation may forfeit its charter. Thus the Tax Commission of Ohio, in its 1925 Report (p. 14), stated that the charters of about 3000 corporations were cancelled when their delinquent taxes, after due notice, remained unpaid.

INSURANCE COMPANIES

Gross Receipts.—Two interesting U. S. Supreme Court cases involve the gross receipts taxes of insurance companies. In one (*Hanover Fire Insurance Co. v. Carr*, decided Nov. 23, 1926), an Illinois foreign insurance company had prior to 1922 been subject to a privilege tax based upon gross premiums received in the state. The tax had been regarded as in the nature of a property tax and had been "equalized" in a way similar to equalization under the general property tax, in addition to the 50% statutory fractional property tax assessment, making the basis of the tax about 30% of the receipts instead of 100%. In 1922 the state supreme court held the tax to be an occupation tax and not a property tax, thus rendering both forms of "equalization" inapplicable. The tax was held to be in violation of the equal protection clause, domestic insurance companies being exempt from it.

Ohio Automobile Case.—In the other case (*Palmetto Fire Ins. Co. v. Conn*, decided Oct. 5, 1926) a North Carolina Insurance Company issued to a Michigan automobile manufacturer blanket fire and theft policies on cars sold, the purchaser in, say, Ohio, automatically taking the insurance as a part of his bargain. It was held that the power to insure the car arose under the Ohio laws, that the business was done in Ohio, and that gross premium taxes, or such other taxes as were imposed by the state were valid in Ohio.

BANK TAXATION

Interpretation of Section 5219.—

The unsettled condition in bank taxation has been aggravated by a series of court decisions interpreting the 1923 amendment to Section 5219 of U. S. Revised Statutes, in particular the following proviso: "That bonds, notes, or other evidences of indebtedness in the hands of individual citizens not employed or engaged in the banking or investment business and representing merely personal investments not made in competition with such business, shall not be deemed moneyed capital within the meaning of this section." There is evidence in the debates of Congress that the intention was to eliminate most of such intangibles as are now subject to low-rate mill taxes from the category of "competing moneyed capital." (See AMERICAN YEAR BOOK, 1925, pp. 342-344, and 1926, pp. 345-347, for the origin and development of the present problem involving competing moneyed capital.)

This purpose seemed to have been achieved when in a recent case (269 U. S. 341) the new definition of moneyed capital was held to "exclude bonds, notes or other evidences of indebtedness when held merely as personal investments of individual citizens not engaged in the banking or investment business, for capital represented by this class of investment is not employed in substantial competition with the business of national banks." But in a later case (71 L. Ed. 530) the Supreme Court, in reversing a decision of the Wisconsin supreme court, held that Section 5219 "is violated wherever capital, substantial in amount when compared with the capitalization of national banks, is employed either in a business or by private investors in the same sort of transactions as those in which national banks engage and in the same locality in which they do business." A companion case (71 L. Ed. 535) was decided on the same day (March 21, 1927), on similar issues, and of course in the same way. A third case (Georgetown National Bank v. McFarland) involving a similar issue under the Kentucky law was decided differently because the

competition alleged was not specifically proved, the bank having relied upon general evidence.

If the foregoing definition be strictly adhered to, the amendment of 1923, as well as the amendment of 1925, which retained the proviso in question unchanged, will be nullified. If all "moneyed capital," arising from transactions which a national bank might carry on, is to be included in competing "moneyed capital," nearly all forms of intangible will be included. For the national banks may engage in practically every type of financial activity. Almost the only form of credit that could not be defined as "competing" is bank deposits. Should Congress refuse to amend Section 5219, and should the Supreme Court retain and extend the definition employed in the Wisconsin case, a serious situation will arise.

Minnesota Situation.—With the foregoing situation as a background it is suggestive to describe briefly the recent developments in Minnesota, the state that has, since 1911, been considered as having solved, in part at least, the problems of the taxation of intangibles. Being in session at the time of the adverse decisions, the legislature proposed to meet the requirements of the law by two measures: First, mortgages, long subject to a recording tax only, were to be classed with money and credits. Second, money and credits were to be classed as (1) competing and (2) not competing with the shares of national banks. The former class was to retain the present low-rate of 3 mills, while the latter was to take the local general property tax rate.

But the financial interests feared the consequences. Of the 271 national banks, 264 have filed with the Tax Commission written agreements, backed by authorizations from their stockholders, to pay their taxes, under the old arrangement, for the ensuing two years. The proposal to revise the tax law was dropped. The legislature, however, provided for an interim commission to consider the problem.

The agitation is not confined to one state, or a few states, although the question has been litigated in only

VIII. PUBLIC FINANCE AND TAXATION

a few of the states that will ultimately be affected. At the Toronto conference of the National Tax Association (October 10-14, 1927), although no provision had been made therefor on the regular program, a session was arranged to consider the need for action on the part of the states interested. A committee was appointed for that purpose, and has attempted to secure the appointment of a cooperating committee from the American Bankers Association.

Discrimination Against a National Bank.—There have been other recent decisions such as in Massachusetts and Kansas, involving issues of discrimination against a national bank, not as compared with "competing moneyed capital" in general, but in comparison with shares of state banks. In one case (252 Pac. 876) a national bank had been assessed without deduction of certain non-

taxable securities, which in itself is legal enough (cf. 263 U. S. 103), since national bank shares technically are taxable to the shareholders, but the Montana statutes require the capital of the state banks to be taxed against the bank, and in such a case the non-taxable securities must then necessarily be deducted.

The assessor is to assess against the shareholders the excess of the value of the shares, over the assessed valuation taxed against the bank, and represented by the tax-exempt securities. However, in this case he had not done so. Hence the complaint of discrimination was well founded. Nevertheless, plaintiff's tax was sustained. It was held that a tax law cannot be held invalid for want of equality and uniformity resulting from error or misconduct of an official intrusted with its administration.

INHERITANCE TAXES

BY ALZADA COMSTOCK

PROFESSOR, MOUNT HOLYOKE COLLEGE

ESTATE TAX

Question of Repeal.—The question of the repeal of the Federal estate tax was repeatedly under discussion in 1927, when the rates fixed by the Revenue Act of 1926 were still in force. These rates were from 1 to 20 per cent on the net estate, with an exemption of \$100,000 and a credit of 80 per cent for inheritance taxes paid to the states. Only three states, Alabama, Florida and Nevada, and the District of Columbia had no inheritance laws in 1927.

Secretary Mellon.—Secretary of the Treasury Andrew W. Mellon, in submitting to the House Ways and Means Committee on October 31 his statement of necessary changes in taxation, renewed his recommendation that the estate tax should be repealed. The argument was based on the traditional use of the inheritance tax by the states, the practice of the Federal Government of limiting its use of such taxes to war emergencies, and

the absence of need of the small amount of revenue yielded.

Secretary Mellon estimated that, owing to the 80 per cent credit on the taxes paid to the states, the Federal tax would not yield more than \$20,000,000 in five years. He stated that if it were repealed the loss in revenue in the fiscal year 1929 would not exceed \$7,000,000.

Organized Opposition.—The movement for repeal was supported by a number of influential organizations. The Chamber of Commerce of the United States, maintaining a position on this subject which it took after a referendum was submitted to its membership in 1925, stated that the estate tax measure had no place in the tax system in times of peace and should be repealed. The Merchants' Association of New York wrote to the Secretary of the Treasury that "the emergency need for revenue . . . has passed away sufficiently to make desirable the repeal of the remaining

INHERITANCE TAXES

Federal estate tax and the relinquishment of that source of revenue to the states."

The taxation committee of the Investment Bankers' Association of America reported for "the immediate repeal of the Federal estate tax, upon the ground that death taxes should be left to the several states and that such levies should be used by the Federal Government only in times of war emergencies." The National Council of State Legislatures took the position that the purpose of the existing Federal estate tax law was not revenue, but an attempt to coerce the states into levying uniform estate tax laws.

Support for the Tax.—In November the House Ways and Means Committee expressed its disapproval of the Treasury program of estate tax repeal by a vote of 17 to 6. Representative Green of Iowa, Chairman of the Committee, stated that it was important, from the point of view of Congress, to know how much money had been collected to advocate the repeal of estate taxes, and what agencies paid the expenses of state officers who came to Washington to urge the repeal.

The Treasury assertion that after five years the estate tax would produce only \$20,000,000 was contradicted in the course of the hearings before the committee. Testimony was given that only 17 states permitted their citizens to claim the full 80 per cent credit. It was argued that the loss to the Treasury through the repeal of the estate tax would deprive the corporation tax of a reduction of 1 per cent.

FEDERAL GIFT TAX

The Federal gift tax, which was associated with the estate tax as a part of the Revenue Act of 1924, became inapplicable to gifts made before the passage of that act by a decision of the Supreme Court made public on November 21st. The court was divided evenly on the constitutionality of the question of whether the Bureau of Internal Revenue could assess gifts made during 1924 but prior to June 2nd of that year, the date of the passage of the Revenue

Act. The net effect of the decision was to force the Bureau to return money collected on gifts made in 1924 prior to the passage of the act, but to leave the tax operative up to the time of its repeal by the Revenue Act of 1926.

RECIPROCITY AMONG THE STATES

Setback.—Reciprocity among the states with respect to the taxation of inheritances was given a setback in November, 1927, when the United States Supreme Court refused to review the New York State law providing for the taxation of the estates of non-resident decedents at a flat rate instead of the graduated rates applicable to the estates of residents. The reciprocity plan had previously been one of the most important factors in inheritance tax reform. The movement was inaugurated in 1925 when Pennsylvania, New York, Massachusetts and Connecticut agreed that they would not tax the stocks and bonds of non-resident decedents of the enacting state. This reciprocity became effective, not only among these four states, but also with the group which have no inheritance taxes, Alabama, Florida, Nevada and the District of Columbia; those which do not tax the intangible property of non-resident decedents, Georgia, Vermont, Rhode Island, Tennessee, Massachusetts (1927), Colorado (1927) and Delaware (1927); and new states in the reciprocity group, Maine, New Hampshire, Maryland, Ohio, Illinois, Oregon and California. As a result, 21 states and the District of Columbia, representing about 60 per cent of the population of the United States, were cooperating in the reciprocity movement.

New York Plan.—In 1925 the State of New York adopted a new section of its tax law providing for the "Matthews" or "New Hampshire" plan of taxing the estates of non-resident decedents at a flat rate instead of the graduated rate in force for resident decedents. The Court of Appeals of New York State, in a decision in the case of *Smith v. Loughman, et al.*, which was handed down on July 20, 1927, held that the flat rate tax violated the Federal Con-

VIII. PUBLIC FINANCE AND TAXATION

stitution in that it denied to the citizens of other states equal privileges and immunities with the citizens of New York State. The court was not concerned with the reciprocity principle, and the hope was left that a way may be found to make that principle operative within the limits set by the decision.

The New York law was enacted in good faith to lighten the burden on non-residents' estates. Other state statutes, passed with a similar end in view, were rendered valueless by the refusal of the United States Supreme Court to pass on the question whether such arrangements were in violation of constitutional rights.

AUTOMOBILE AND LICENSE TAXES

BY BEULAH BAILEY

LIBRARIAN, NEW YORK STATE DEPARTMENT OF TAXATION AND FINANCE

Basis.—During the two decades of motor vehicle history the basis of tax in the various states has passed through the cycles of flat rate, value, horse power and weight. Weight seems to be the last cycle but today for pleasure cars there are only fifteen states using weight as a basis, while seventeen are still using horse power and seven, horse power and weight. The basis of tax in the remaining nine states, is, in three, value; one, value and weight; one, horse power, value and weight; one, a flat rate; and three, flat rate and weight. The basis of trucks is more concentrated as there are twenty-three states using ton capacity; sixteen, weight, and four, capacity and horse power. The remaining five each have different bases which are horse power and capacity; tire width; value, horse power and weight; flat rate and ton capacity; flat rate and weight; and value.

Legislation.—With the exception of Georgia where the basis of taxation was changed from horse power to weight, there was, during 1927, no change in the registration fees on pleasure cars. The total tax was reduced in New Jersey by the removal of the general property tax on motor vehicles. In California and Maine the registration fees were raised on trucks. Formerly in California the range was from \$5.00 to \$20.00 for pneumatic tires and \$10.00 to \$40.00 for solid. Now it is from \$20.00 to \$70.00 for the former and twice the amount for the latter. In Maine the range was from \$10.00 to \$110.00;

now it is from \$10.00 to \$150.00. Alabama levies special fees ranging from \$265.00 to \$1500.00 on trucks using gasoline on which the tax has not been paid. If the gasoline tax is paid the fees are from \$15.00 to \$1,000.00.

According to the Bureau of Public Roads the receipt from the gasoline tax during 1926 in forty-four states and the District of Columbia, was \$205,000,000 and from registration fees in the forty-eight states and the District of Columbia, \$288,282,452. The registration fees include only those paid to the state. There are eight states, Arkansas, Illinois, Kentucky, Missouri, Nebraska, North Carolina, Tennessee and Virginia that permit municipal taxation of motor cars in addition to the state. However, all cities do not take advantage of the privilege.

Common Carriers.—The acute motor vehicle problem of to-day is the taxation of motor common carriers in a way that will equalize the tax burden between them and the railroads, both steam and electric, the desire for equalization being on the part of the railroads. Today there are more than 32,000 common carriers in use in the United States. Seven states, Arkansas, California, Connecticut, Idaho, Nevada, North Carolina and South Dakota have an excise tax on the gross receipts of common carriers. In Arkansas, Connecticut and Nevada the excise tax is in addition to registration fees. The rate of tax varies from 2% of the gross in Arkansas to 6% of the gross in North

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Carolina. Connecticut is 3%, Nevada and South Dakota 4%, California 4½% on passenger carriers and 5% on property carriers, and Idaho 5 per cent.

Connecticut and New Jersey each have a special tax on interstate business. In Connecticut the tax is 1 cent for each bus mile traveled in the state and in New Jersey it is ¾ of 1 cent for each half bus mile. During 1927 Maine, Missouri, Nevada, Texas and Wyoming increased their registration fees on common carriers. The bases for the registration fees are more diversified in the case of common carriers than for either trucks or pleasure cars. Eighteen states use their regular fees plus seating capacity; eight states, seating capacity alone; four, the before mentioned excise tax alone and four, mileage plus seating capacity. The remaining fourteen states are divided

between mileage, mileage plus gross weight, flat rate, flat rate plus seating capacity, gross weight, gross weight plus seating capacity, value, weight, seating capacity and mileage and three states use the same basis as used by pleasure cars but double or treble it.

Although during 1927 twenty-two states increased their gasoline tax, and two states, Illinois and New Jersey, levied one for the first time, yet in no state was there any decrease in motor vehicle registration fees except in North Dakota where, in the case of common carriers, the fee per passenger capacity was reduced from \$10 to \$5. Only in very few instances has the levying of a gasoline tax been accompanied by a decrease in registration fees. The demand for good roads is ever increasing and good roads mean an ever increasing money outlay.

COGNATE SOCIETIES

BANKING AND CURRENCY

AMERICAN BANKERS ASSOCIATION.—110 E. 42nd St., New York, N. Y.

AMERICAN INSTITUTE OF BANKING.—110 E. 42nd St., New York, N. Y.

INVESTMENT BANKERS ASSOCIATION OF AMERICA.—105 S. La Salle St., Chicago, Ill.

INVESTORS' VIGILANCE COMMITTEE, INC.—42 Broadway, New York, N. Y.

NATIONAL ASSOCIATION OF MUTUAL SAVINGS BANKS.—11 E. 36th St., New York, N. Y.

NEW YORK CLEARING HOUSE ASSOCIATION.—77 Cedar St., New York, N. Y.

PRIVATE BANKERS' ASSOCIATION.—31 Nassau St., New York, N. Y.

UNITED STATES LEAGUE OF BUILDING AND LOAN ASSOCIATIONS.—Cincinnati, O.

INSURANCE

ACTUARIAL SOCIETY OF AMERICA.—256 Broadway, New York, N. Y.

AMERICAN INSTITUTE OF ACTUARIES.—Care of Equitable Life Insurance Co., Des Moines, Ia.

AMERICAN INSTITUTE OF MARINE UNDERWRITERS.—56 Beaver St., New York, N. Y.

ASSOCIATION OF LIFE INSURANCE PRESIDENTS.—165 Broadway, New York, N. Y.

CASUALTY ACTUARIAL SOCIETY.—75 Fulton St., New York, N. Y.

NATIONAL AIRCRAFT UNDERWRITERS' ASSOCIATION.—120 W. 42nd St., New York, N. Y.

AMERICAN LIFE CONVENTION.—Omaha, Nebraska.

AMERICAN MARINE INSURANCE SYNDICATE.—56 Beaver St., New York, N. Y.

ASSOCIATION OF CASUALTY & SURETY EXECUTIVES.—Globe Indemnity Co., Newark, N. J.

BOARD OF UNDERWRITERS OF NEW YORK.—56 Beaver St., New York, N. Y.

NATIONAL ASSOCIATION OF LIFE UNDERWRITERS.—25 W. 43rd St., New York, N. Y.

NATIONAL ASSOCIATION OF MUTUAL CASUALTY COMPANIES.—730 Fifth Ave., New York, N. Y.

NATIONAL ASSOCIATION OF TRAVELERS'

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AID SOCIETIES.—23 W. 43rd St., New York, N. Y.	INSURANCE.—151 Fifth Ave., New York, N. Y.
NATIONAL BOARD OF FIRE UNDERWRI- TERS.—85 John St., New York, N. Y.	NATIONAL COUNCIL ON WORKMEN'S COMPENSATION INSURANCE. — 80 Maiden Lane, New York, N. Y.
NATIONAL BUREAU OF CASUALTY & SURETY UNDERWRITERS.—120 W. 42nd St., New York, N. Y.	NATIONAL FIRE PROTECTION ASSOCIA- TION.—Boston, Mass.
NATIONAL COUNCIL ON COMPENSATION	SURETY ASSOCIATION OF AMERICA.— 160 Broadway, New York, N. Y.

DIVISION IX

DEFENSE AND ARMAMENTS

MILITARY PROBLEMS OF THE UNITED STATES

BY WILLIAM ADDLEMAN GANOE

MAJOR, U. S. A., HISTORICAL SECTION, ARMY WAR COLLEGE

THE ARMY AND WAR DEPARTMENT

Scope of Service.—The Army and the War Department in attempting to give the United States proper land defense, in conducting an elaborate school system, in operating training camps, in administering to the wants of the citizen army, and in supervising Rivers and Harbors, Flood Control, Inland Waterways, Panama Canal and Insular Affairs, have during 1927 yielded an output seemingly beyond capacity.

Military Strength.—Regardless of the important non-military contributions the War Department activities make to America, national security remains the paramount duty of the Army. Naturally its strength is a vital factor in the possibility of rendering that security. The following comparison of figures will give a survey of military potentiality in the United States during the last decade.

Year	Estimated Population of U. S.	Strength of Regular Army (Officers and Men)
1917 (Apr. 6)	113,854,000	132,517
1918 (June 30)	115,461,000	725,965
1919 "	117,069,000	836,845
1920 "	118,683,000	200,299
1921 "	120,902,000	219,527
1922 "	122,545,000	138,424
1923 "	124,539,000	113,640
1924 "	126,771,000	132,665
1925 "	128,617,000	127,523
1926 "	130,570,000	124,928
1927 "	132,256,000	125,027

To bring out more easily the comparative values of these columns, the graph on the following page is inserted.

An analysis of both the figures and the curves will disclose anomalies. On April 6, 1917, the Regular Army numbered roughly .0011 of the population. On June 30, 1927, it numbered .0009 of the population. To-day it is less by some 7500 than at the outbreak of war in 1917. Since that time it has risen and fallen until it is now nearly 6% less than then, while the country has been increasing in people by over 16%. Though the strength of the Army has shown a wavering tendency ever since the close of the war, in general the trend has been toward a positive decline in numbers.

SERVICE PROBLEMS

Army Morale.—One of the most acute problems with which the service is faced is that of keeping up the necessary morale under the increasing duties of a decreasing army. The junior officers especially are faced with a blank future so far as promotion is concerned. Hope, so necessary for the individual in every enterprise, has been cut away to such an extent that only the high principles of the soldier keep the standard of accomplishment at the proper level.

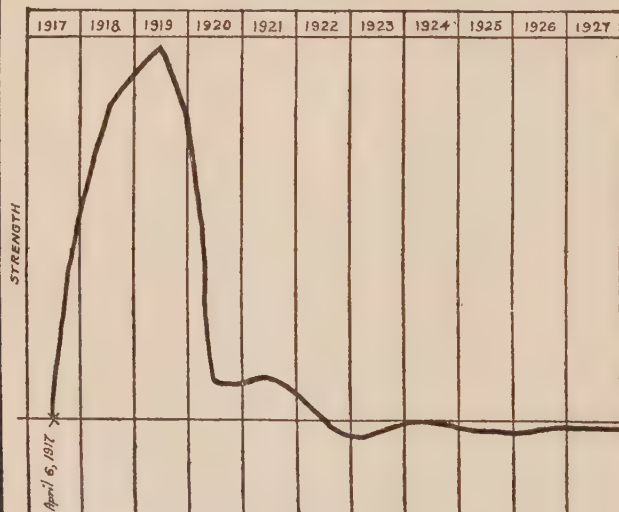
National Guard and Reserves.—In another way, the existing number of trained soldiers of the Regular Army scarce suffice for the great task of keeping the National Guard and Reserves, the other components of the Army of the United States, abreast of the fast advance of science in warfare. The present condition makes it largely impossible to give the Reserve Officers actual practice in han-

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STEADY GROWTH OF POPULATION OF UNITED STATES.



FLUCTUATING STRENGTH OF REGULAR ARMY.



ding units—work absolutely indispensable to efficiency and saving of life in time of stress. Added to such drawback is the constantly decreasing supply of veterans of the World War. Those left become more and more incapable of any part in an emergency because of age, disease, lack of intermediate training and the inevitable results of passing years. Not only is such a reservoir diminishing but new material to replenish it is far from sufficient.

Besides the instructor personnel for the National Guard, which is in the above described state of depletion, the annual turnover of that component of the army is so large as to minimize the efficiency and solidarity of the units. Those organizations are most stable and successful that are located in communities which react favorably to a self-respecting national security. The opposite is the case where pernicious propaganda and actions based upon ignorance of our own history are rife.

Supplies and Mobilization.—The problems in supply of the Army for present and future contingencies have been as difficult as those of actual training of men, and quite as important. In the light of the great industrial necessities of the last war, the question of procurement, planning and industrial mobilization is one of saving or loss running into the billions in any future emergency. The prime object of the Assistant Secretary's Office is to capitalize the business experience of the country so that sound methods may be employed in spending the Government's money. Problems in this regard resolve themselves into active participation in the program of expenditures and in the action required to obtain the necessary funds from Congress; into a comprehensive survey of methods of purchase; and into the collection, compilation and analysis of statistical information regarding supply branches in their procurement functions.

Three sections,—the budget, procurement control and statistical—are the offices charged with the accomplishment of the outlined mis-

sion. The first participates in hearings on the estimates and is consulted in apportioning funds to the supply branches. The second examines proposals, abstracts of bills, open market purchase reports and contracts in order to see that supplies are efficiently and legally obtained. The third compiles charts and analyzes quarterly reports covering wide fields for the purpose of publication in the interests of economy.

NON-MILITARY FUNCTIONS

Philippines.—In the non-military functions of the War Department, its services have been brought into special notice by several outstanding happenings. Prominent in the public eye were the supervision of flood control activities in the Mississippi Valley, the government of the Philippine Islands and the administration of the Inland Waterways Corporation. The indefinite political status of the far islands of the Pacific has been a hindrance to rapid development. The limiting conditions imposed by the land laws continue to be a drawback to material progress. The exclusiveness of the immigration statutes prevents Chinese labor in large quantities from advancing agriculture particularly. On the other hand the free trade with the United States and the maintenance of an autonomous government have been distinctly advantageous to the population of the islands.

Porto Rico.—Porto Rico's progress is steadily upward, its greatest problems being unlike those of the Philippines, an excessive population and a lack of sufficient industries to employ a greater proportion of the inhabitants.

Panama.—In the Panama Canal the greatest need is a new dam on the Chagres River so as to give the necessary storage water to make the canal work to capacity.

Mississippi Flood.—The unprecedented floods on the Mississippi broke into the adopted plan for the control of excessive water of that stream. Under the plans of the Engineers the levee system had reached before 1927 a point where the adjacent country was protected against the ordinary

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annual flood. The country is faced with the necessity of adopting a new and enlarged project for flood control of that great river. The catastrophe, coming as it did, caused much of the normal funds to be diverted into emergency control. The exhaustion of money and the extensive studies called for will inevitably cause delay in the solution of the future flood question.

Sacramento River.—Besides the Mississippi question is that of the Sacramento River Project under the supervision of the California Débris Commission, consisting of three officers of the Corps of Engineers whose duties are to see that the rivers of the great central valley of California are not obstructed by débris from the hydraulic mining.

Inland Waterways Corporation.—The problems of the Inland Waterways Corporation are the building up of suitable navigable streams, acquiring appropriate boats for each particular stream, erecting practical terminals, gaining cooperation with railroads, and dividing the revenue equitably. The absence of all or a part of these requisites had previ-

ously caused the abandonment by the private carrier of his work on the inland stream. To resuscitate such commerce is the work of the Inland Waterways Corporation.

ARMY AIR CORPS

Though the Act of July 2, 1926 expanded the Army Air Corps to 1,800 planes, 1,650 officers and 15,000 enlisted men, an increase to be reached at the end of a five-year period, it brought added problems. The acquirement of the extra personnel, extra schools and competent housing are matters yet to be solved. The slow rate of promotion and the apparent inability to get officers to transfer from other branches are some of the obstacles. Additional flying schools are necessary, but such an enlargement must be made so as to increase the number of graduates over that of beginners without lowering the flying standard. The abominable housing conditions throughout the service are accentuated in the Air Corps. Since it is a comparatively new branch, it can be assigned few of the old permanent structures built before the war.

MILITARY EDUCATION

BY WILLIAM ADDLEMAN GANOE

MAJOR, U. S. A., HISTORICAL SECTION, ARMY WAR COLLEGE

CLASSROOM INSTRUCTION

Practical Application.—During 1927 the trend of the extensive educational system conducted by the Army has been toward the practical application of classroom instruction. Wherever means afforded, students of military topics were allowed the opportunity of putting into practice the principles of theoretical instruction.

Army Manoeuvres.—To this end profitable manoeuvres were conducted in San Antonio, Texas, during May, 1927. The entire Second Division, a part of the First Cavalry Brigade and 201 planes of the Air Corps participated. Not only was valuable experience gained by the assembling of so many ground troops, but the air force present co-

operated with the largest concentration of its tactical elements since the World War. For the first time since 1918 all types of air units were placed under one commander and given opportunity to function as part of a combat team. It was a first attempt to demonstrate that theories as to the proper command relations between air and other troops were feasible from the standpoint of all commands.

In the latter part of the same month the Army and Navy conducted joint exercise off the New England Coast. Communication, aircraft and anti-aircraft installations were stressed. The outcome of the combined practice was an increased understanding of the parts to be played

by each service and marked advance in mutual solution of common problems of defense.

Other practical exercises were held by the Army at Camp Dix, N. J.; Fort Riley, Kan.; Fort Sill, Okla., and Fort Benning, Ga. Not only did attack, pursuit and bombardment planes take part in them, but attack aviation gave demonstrations to boards of combatant arms for purposes of study of defensive measures to be taken against attack from the air.

SCHOOL AND COLLEGE WORK

Scope.—The actual school work of the Army was spread over many fields. From the 878 cadets at the Military Academy on June 30 to the thousands of enlisted men taking post school courses, there was almost every class of education being imparted throughout the service. Experienced officers were sent to 3 General Service Schools, less experienced to 28 Special Service Schools and officers and enlisted men to 12 Schools for Bakers and Cooks. Resident and Correspondence courses were available in these institutions to thousands of Regular, National Guard and Reserve Officers. In addition Regular Officers underwent instruction at foreign military schools, civilian colleges and universities and the Naval War College.

Training Corps and Camps.—Education within the Army for its own efficiency and that of the National Guard and Organized Reserve was supplemented by a vast amount of instruction disseminated by Army personnel to schools and colleges over the country. At the close of the school year, 1926-27, there were 108,957 students enrolled in the Reserve Officers Training Corps, of whom 5,891 were graduated, the largest number to complete since the World War. Subsequent to its reorganization under the Defense Act of 1920, the R. O. T. C. has produced in round numbers 29,500 graduates, the great majority of whom were eligible for eventual commission in the Officers' Reserve Corps. During the summer of 1927 there were successfully operated in the nine corps areas,

including one camp in Porto Rico, Citizens' Military Training Camps with a total enrollment of 38,597 who completed 30 days training. Approximately 10,000 more had to be denied admittance on account of lack of adequate appropriations. It was possible to give the training to all of the 38,000 only because the War Department had made savings from the year preceding.

The General Service Schools, those of advanced study and practice in the military service, the War College and the Industrial College in Washington, D. C., and the School of Staff and Command at Fort Leavenworth, Kan., turned out a total of approximately 300 graduates.

The Special Service Schools, comprising 27 different institutions over the United States and catering particularly to the technical needs of the different branches, conduct a multitude of courses for Regular, National Guard and Reserve Officers and enlisted men. Some foreign officers have also been admitted.

The Infantry School, taking up an area of almost two counties in Georgia, gave practical and theoretical training and instruction to 411 officers of Regular Army, National Guard and Organized Reserve, all of whom were graduated. In addition, there were 47 graduates of the Enlisted Specialists courses. At present there are 2044 graduates of one of the courses at the Infantry School out of a possible 3670 officers of infantry. More and more effort is bent upon making instructors of the graduates so as to disseminate interestingly correct and uniform methods. For this reason, in addition to the professional subjects, physical training, military history, instructional methods and psychology are prominent in the schedule. The student is taught the theory first and is compelled to make a practical application of it later. There is little of the eye work that is not supplemented by the hand development.

The Tank School graduated 24 Regular, 3 National Guard and 2 Reserve Officers. It also graduated 185 enlisted men from 12 different technical courses. The curriculum

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includes Tank Reconnaissance, Weapons, Mechanics (light and heavy), Driving and Motor and Battery Maintenance and Repair. The enlisted men receive typing and stenography in addition. Since tanks are an integral part of the Infantry, it is planned to move the Tank School to Fort Benning at an ultimate annual saving of \$82,000. Besides the centralization of instruction, the effect will be to broaden the work with greater attention to coordination and team play.

The Cavalry School continued to be the criterion of cavalry instruction and horsemanship for the entire Army. It is the finest institution for mounted work in this country. Its mission is to standardize and develop the training of officers in technique and tactics and to make of enlisted men instructors in horseshoeing and saddling. One hundred and thirteen officers of the Regular Army, National Guard, Reserve and one Cuban officer finished the Advanced, Advanced Equitation, Troop Officers, Refresher or Special Courses. Forty-six enlisted men of the Regular Army and National Guard finished the horseshoer's course and 20 of the Regular Army the saddlers'. The effects of the Cavalry School are felt in every branch of riding in the United States, military and civilian, especially in polo.

Since the establishment of the Cavalry School the standard of horsemanship in the Army has been steadily raised. This is reflected not only in the cavalry but in other branches as each year officers of other arms of the service attend the school. Since all cavalry officers are or will be graduates of the school, instruction in horsemanship will ultimately be thoroughly uniform. The efficiency of the training given at the Cavalry School is shown in the success of service riding teams in the principal horse shows of the East and Middle West. A horse show team has been formed at Fort Riley for the purpose of training men and horses for competition in the next Olympic Games. With the thorough methods in vogue at the school it is believed that the United States Army

will take high rank in this competition.

The Field Artillery School formulates, develops, studies and imparts the training doctrines of its branch toward the education of all field artillerymen in the United States. Last year 147 officers were graduated from its Advanced, Battery Officers, Refresher, Special Refresher, National Guard and Reserve courses. In addition 19 enlisted men passed through its Battery Mechanics Course, 28 officers and 49 enlisted men through its Horseshoer's Course and 7 enlisted men through its Saddler's Course. A field artilleryman of the Regular Army normally in his service has two 9-month and one 3-month course at this school.

The Coast Artillery School has had pass through its courses 50% of the officers of its corps. This year 73 Regular Army, Marine Corps and one foreign officer graduated from regular courses and 27 National Guard and Reserve Officers graduated from special courses. At this technical school there are courses not only in heavy artillery but also in Engineering, Electricity and Radio. Clerical courses are conducted especially for non-commissioned staff officers.

The Engineer School is a most important function of the Corps of Engineers. It is maintained for this purpose at Fort Humphreys where it was established in November 14, 1918. The Company Officers' Course for the school year 1926-27 commenced September 6, 1926, with 26 officers in attendance comprising 21 Captains and Lieutenants in the Corps of Engineers, one Captain of Infantry, two officers from the Mexican Army and one officer from each of the Bolivian and Cuban Armies. This class graduated on June 4, 1927.

In addition 14 officers attended Cornell University, 3 attended Massachusetts Institute of Technology and three the University of California. All were graduated this year with degrees of C.E., Bachelor of Sciences, and B.S.C.E. respectively. Three officers attend Oxford University, England, as Rhodes Scholars where they will finish their course in June, 1928.

Between March 5-June 4, 1927, a National Guard—Reserve Officers' Course was given at Fort Humphreys for a class comprising 14 National Guard officers and 6 Reserve Officers. A class of 26 enlisted men completed Enlisted Specialists Courses in surveying and drafting, map reproduction and in machinist work.

The Signal School graduated 46 officers from its regular Company Officers' course, of which 3 were from the Marine Corps, and 6 from its National Guard and Reserve Officers' course. The officers' course covered the theory and operation of modern electric communication equipment together with the coordination and application for military purposes. Enlisted men were taught to be expert telegraph, cable, telephone and radio operators and to be proficient in the management of signal communication stations.

The Finance School trains its personnel in the technical details of disbursing and accounting and in property auditing. The past year there were graduated 56 officers and 55 enlisted men. A winter evening course was also given to Reserve Officers with a view to fitting them for their duties in case they are called to active duty under the mobilization plan. This course is an extremely practical one, the officers being taken step by step through the process of opening a disbursing account, conducting the affairs of the office for a period of time, closing their office and accounting for the funds.

The Army Medical School, covering courses in Preventive Medicine, Clinical Pathology, Surgery, Clinical Medicine, Ophthalmology, Oto-Rhinolaryngology, Roentgenology, Gas Defense, Aspects of Aviation Medicine, Bacteriology, Sanitation and Hygiene, Medical Protozoology, Helminthology, Entomology, Immunology, Epidemiology, Sanitary Chemistry, Meat and Dairy Hygiene and X-ray Technique, graduated 47 officers from its basic and advanced courses and 34 enlisted men as X-ray and laboratory technicians.

The Army Dental School, covering courses in Clinical Dentistry, Pros-

thesis, Oral Surgery, Roentgenology, Preventive Medicine and Clinical Pathology, graduated 9 officers and 7 enlisted men as dental hygienists and mechanics.

The Army Veterinary School, covering courses in Meat and Dairy Hygiene, Veterinary Forage inspection, Preventive Medicine, Clinical Pathology, Roentgenology, Clinical Medicine, Surgery and Animal Management, graduated 10 officers and 6 enlisted men as veterinary technicians.

The Medical Field Service School, covering courses of technique, tactics and supply, affecting the Medical Corps, graduated 91 officers of the Regular Army, National Guard and Reserve and 53 non-commissioned officers in similar courses for enlisted men of the Regular Army and National Guard.

The School of Nursing, including the class of 1927, has graduated 709 nurses. Of this number 172 have been members of the Army Nurse Corps. There are now 147 active students in the School, representing 31 states and the Philippine Islands. Approximately 70 students are admitted each year. Three affiliations are maintained: the Philadelphia General Hospital, Philadelphia, for three months each in pediatrics and obstetrics; the St. Elizabeths Hospital, Washington, for three months in psychiatry and the Instructive Visiting Nurse Society, Washington, for four months in public health nursing. Candidates for the School must be between nineteen and thirty years of age, single, citizens, in good physical condition and graduates of an accredited high school or the equivalent.

The Ordnance School saw this year a change in its curriculum. Course I now consists of the following subjects: differential equations, inorganic chemistry, elementary electricity, kinematics and machine design, theory of electricity, heat engineering, electrical laboratory, general chemistry and powder, chemical laboratory, power laboratory, theory of the gyroscope, and ordnance engineering. Course II consists of the following subjects: metallurgy, administration, machine shop, ordnance

problems, gas engines, and raw material. Course II is essentially a practical course; it has been modified by including nine weeks of instruction in the inspection and maintenance of material. It is anticipated that the revised course will be much more effective in preparing officers for duty in the field. Ten officers take Course I, and the same number take Course II each year.

The Ordnance Specialists' School has the general mission of instructing and training officers and enlisted men in the specialized duties and requirements of the field service of the Ordnance Department. During the past school year 26 officers, 110 enlisted men of the Army, 10 chief petty officers of the Navy, and 2 civilians received instructions; 9 Ordnance officers completed a special nine-weeks' course in field service; 1 Ordnance officer completed a special twelve-weeks' course in field service; 3 Ordnance officers completed various short courses in materiel; 2 National Guard officers completed the regular officers' course in Maintenance; and 11 officers of the Organized Reserves completed fifteen-days' special courses in basic mobilization. In the Non-commissioned Officers, Specialists and Special courses 109 enlisted men and civilians completed instruction.

The Chemical Warfare School has done its share of cooperation in training officers and enlisted men in its broad courses in chemistry. The past year 248 officers and enlisted men of nearly every branch of the service have been graduated from one of its four courses. Of this number 67 officers and 105 enlisted men were from the Navy. The curriculum includes a study of chemical agents, together with the fundamental principles of chemistry and physics, training in individual and collective protection against chemical agents, meteorology, staff organization and functions, tactical problems, chemical warfare supply and history of chemical warfare and its new developments.

QUARTERMASTER CORPS

The Quartermaster Corps, during 1927, from its three schools, the Quartermaster School, the Subsist-

ence School and the Motor Transport School, and from civilian schools, such as the Harvard School of Business Administration, Babson Institute, Massachusetts Institute of Technology and Philadelphia Textile School graduated 74 officers. To date 433 officers of this branch of the service have completed such courses. In addition the Quartermaster Corps comprehending schools for bakers and cooks, mess managers and motor transport graduated from these most practical courses in any walk of life the grand total of 1,317 enlisted men. This corps also conducted 29 different correspondence courses of the most constructively industrial nature for 2,590 National Guard and Reserve Officers over the country. It supplemented such instruction with training conferences for about 1,000 Reserve Officers in 35 cities of the United States. Of these conferences 26 covered a six-month course under regular programs of academic and practical training.

ARMY MUSIC

During 1927, the Army Music School graduated and sent out to various Army bands 113 band leaders, soloists and bandsmen from courses which covered a wide range of technical instruction. The curriculum covers scales, chords, rhythmic, sight-reading, transposition, band ensemble work, melodic dictation, solfeggio, pitch discrimination, study of advanced serious compositions, performance of leading parts in small and large ensembles, theory including harmony, music form, applied acoustics, diversified rhythms, modulation, arranging, conducting pedagogy, history of music and band administration. The courses lay particular stress upon ear training, rhythm and legato work.

DIVINITY INSTRUCTION

The Chaplain's School has graduated to date all of the army chaplains except four, thus bringing together for unique and unified training 123 clergymen of 19 different denominations. The Army is not cluttered with creeds. Its schooling and purpose are to give practical benefit from

MILITARY EDUCATION

GENERAL AND SPECIAL SERVICE SCHOOLS

School	Place	Commandant
The Command and General Staff School	Ft. Leavenworth, Kans.	Brig. Gen. Edward L. King
The Army War College.....	Washington, D. C.	Maj. Gen. Wm. D. Connor
The Army Industrial College.....	Washington, D. C.	Col. Harley B. Ferguson
The Quartermaster Corps School..	Philadelphia, Pa.	Col. Irvin L. Hunt
The Quartermaster Corps Subsistence School	Chicago, Ill.	Col. Patrick W. Guiney
The Quartermaster Corps Motor Transport School	Camp Holabird, Md.	Lt. Col. Edgar S. Stayer
School for Bakers and Cooks.....	Ft. Benning, Ga.	Brig. Gen. Edgar T. Collins
School for Bakers and Cooks.....	Corozal, Canal Zone	Maj. Gen. Wm. S. Graves
School for Bakers and Cooks.....	Ft. Sheridan, Ill.	Brig. Gen. Michael J. Lenihan
School for Bakers and Cooks.....	Presidio of San Francisco, Calif.	Col. Frank C. Bolles
School for Bakers and Cooks.....	Ft. Strong, Mass.	Col. Frank E. Harris
School for Bakers and Cooks.....	Ft. Hamilton, N. Y.	Col. Marcus B. Stokes
School for Bakers and Cooks.....	Ft. Benjamin Harrison, Ind.	Col. Geo. D. Freeman, Jr.
School for Bakers and Cooks.....	Ft. Sam Houston, Tex.	Maj. Gen. Ernest Hinds
School for Bakers and Cooks.....	Ft. Wm. McKinley, P. I.	Maj. Gen. Fred L. Sladen
School for Bakers and Cooks.....	Camp Meade, Md.	Capt. Chas. Stalsburg
School for Bakers and Cooks.....	Ft. Riley, Kan.	Maj. Gen. Harry A. Smith
School for Bakers and Cooks.....	Schofield Bks., T. H.	Maj. Gen. Wm. R. Smith
The Army Medical School	Army Medical Center, Washington, D. C.	Brig. Gen. Jas. M. Kennedy
The Army Dental School	Army Medical Center, Washington, D. C.	Brig. Gen. Jas. M. Kennedy
The Army Veterinary School.....	Army Medical Center, Washington, D. C.	Brig. Gen. Jas. M. Kennedy
The Medical Field Service School.	Carlisle Bks., Pa.	Lt. Col. Chas. R. Reynolds
The School of Aviation Medicine..	Brooks Field, Tex.	Brig. Gen. Frank P. Lahm
The Engineer School.....	Ft. Humphreys, Va.	Col. Edward M. Markham
The Ordnance School	Watertown Arsenal, Mass.	Col. Tracy C. Dickson
The Ordnance Specialists' School.	Raritan Arsenal, N. J.	Maj. James H. Burns
The Signal School.....	Ft. Monmouth, N. J.	Lt. Col. G. E. Kumpke
The Chemical Warfare School....	Edgewood Arsenal, Md.	Lt. Col. Walter C. Baker
The Cavalry School.....	Ft. Riley, Kans.	Maj. Gen. Harry A. Smith
The Field Artillery School.....	Ft. Sill, Okla.	Brig. Gen. Geo. LeR. Irwin
The Coast Artillery School	Ft. Monroe, Va.	Brig. Gen. Robt. E. Callan
The Infantry School	Ft. Benning, Ga.	Brig. Gen. Edgar T. Collins
The Tank School.....	Camp Meade, Md.	Col. Oliver S. Eskridge
The Air Corps Advanced Flying School	Kelly Field, Tex.	Brig. Gen. Frank P. Lahm
The Air Corps Primary Flying School	Brooks Field, Tex.	Brig. Gen. Frank P. Lahm
The Air Corps Primary Flying School	March Field, Calif.	Maj. Millard F. Harmon
The Air Corps Tactical School..	Langley Field, Va.	Lt. Col. Clarence C. Culver
The Air Corps Technical School..	Chanute Field, Ill.	Maj. Wm. C. McChord
The Air Corps Balloon and Airship School	Scott Field, Ill.	Lt. Col. Jno. A. Paegelow
The Air Corps Engineering School	Wright Field, Ohio	Lt. Col. Harry Graham
The Army Music School.....	Washington Bks., D. C.	Capt. Curtis D. Alway
The Chaplains' School	Ft. Leavenworth, Kans.	Brig. Gen. Edward L. King
The Finance School.....	Washington, D. C.	Maj. Gen. Kenzie W. Walker

fundamentals. Three chaplains were graduated from advanced courses in our leading universities during this year. Reserve and National Guard chaplains to the number of 1,215 were recipients of the correspondence courses put out by the chaplain's school courses which are as helpful to the public as to the service. This is the only school of its kind in the Western Hemisphere. Every clergyman takes the same course with a

view to administering the rites of any denomination.

AIR CORPS

Its various schools,—The Advanced, Balloon and Airship, Engineering, Tactical, Primary (2) and Technical, covering advanced work in Special Observation and flying, balloon and airship work, engineering tactics, incipient air instruction, communications, armament, photography, crew

IX. DEFENSE AND ARMAMENTS

direction, engine mechanics and training in the varied duties of enlisted men,—graduated 152 regular officers, 106 flying cadets, 17 Reserve officers, 10 National Guard officers, 320 enlisted men, 8 foreign officers, 5 Marine Corps officers, and 5 Naval officers, a total of 623 officers and men. In order to carry out the five-year program (explained under problems) an additional flying school, besides the one at Brooks Field, had to be established at March Field, Riverside, California. So both of the Primary Schools, as well as the Advanced School, are under the Commanding General of the Training Center at San Antonio, Texas.

The School of Aviation Medicine is a unique school under the operating direction of the Medical Corps. The heretofore unknown effects by transit through the air upon the human body are studied at this school. Primarily courses are given to qualify medical officers to become flight surgeons. The curriculum covers neuro-psychology, ophthalmology, otology, physiology and aviation medicine. This year the school graduated 29 medical officers of the Regular Army, Reserve, National Guard and Navy. Since this is the only school of its kind in America, it is of distinct service to civilian as well as army flying.

MILITARY AND NAVAL PENSIONS

By WINFIELD SCOTT

COMMISSIONER, UNITED STATES PENSION BUREAU

The Bureau of Pensions is charged with the administration of all Federal laws relating to pensions. It is the clearing house through which approximately \$8,000,000,000 have been distributed to beneficiaries of the pension system. At the first session of the First Congress, in 1789, the United States assumed payment of the pensions theretofore granted and paid by the respective states. Fostered by subsequent legislation the system was so extended that in 1849 the establishment of the Pension Bureau was deemed necessary to give proper attention to the adjudication of pension claims and the payments of pensions.

The great Civil War gave full swing to pension activities which have been materially increased by obligations due to Indian Wars, the War with Spain, the Philippine insurrection and miscellaneous services, particularly in the Regular Establishment. The biographies of countless thousands who gave themselves to the services of their country repose in the archives of the Pension Bureau, the records for posterity of the deeds of patriotic Americans whose generosity to the Nation earned benedictions which can not be adequately expressed in

mere words and gratuities.

Pensioners.—The close of the fiscal year 1927 showed 489,942 pensioners on the roll as against 501,723 on June 30, 1926, a net loss to the roll of 11,781. There were added to the roll during the year 31,501 and 42,282 were removed by reason of deaths, remarriages, and other causes. Of the deaths during the year 16,958 were of Civil War veterans and 20,828 Civil War widows. Death claimed the comparatively large number of 2,640 Spanish War veterans.

Of the pensioners on the roll at the close of the fiscal year, 90,000 were Civil War veterans, 212,642 Civil War widows, 138,812 Spanish War veterans, and 23,547 Spanish War widows. By class the roll carried 245,866 soldiers, 236,317 widows, 328 nurses, 2,321 minor children, 889 helpless children, and 4,211 dependent relatives of soldiers.

The high water mark of the pension roll was reached January 31, 1905, with 1,004,196 pensioners. The largest number of Civil War soldiers on the roll was in 1898, being 745,822; the largest number of Civil War widows on the roll was in 1912, when 304,373 were carried. In March, 1926, the decreasing number of Civil War

MILITARY AND NAVAL PENSIONS

veterans on the roll was passed by the increasing number of Spanish War veterans and the close of the fiscal year found the Spanish War veterans outnumbering those of the Civil War by 48,812.

Disbursements.—The disbursements for pensions, fiscal year 1927, amounted to \$230,152,712.17 and of the total funds available for this purpose the balance on hand June 30, 1927, was \$1.77. As the Congress appropriated but \$192,000,000 for pensions for 1927, the pensioners throughout the country would not have been paid for May and June, 1927, had not the President overcome the difficulty by approving an advance of \$38,000,000 from the appropriation for the fiscal year 1928. Pensions are payable monthly on the 4th day of the month and to make these payments requires the issuance in the year of over 6,000,000 checks.

Civil War Veterans.—Of the 2,213,365 individuals in the military and naval service of the United States in the Civil War, the pension roll indicates that on June 30, 1927, but 90,000 then survived. Of these 37,700 were receiving \$65 per month, 44,084, \$72 per month because so nearly blind or helpless as to need the regular aid and attendance of another person; and 7477, \$90 per month, the rate provided for those totally helpless or blind. Pensions aggregating \$81,665,502.37 were paid to Civil War veterans in the fiscal year 1927. The death rate for the year was 13.5 per centum. Widows of Civil War veterans received \$84,827,706.20 during the year. Their death rate was close to 10 per centum.

Spanish War.—In the fiscal year 1927, Spanish War veterans received \$47,612,810.61, and to widows and minor children of soldiers who served in said war \$9,516,405.61 were disbursed. Of the veterans on the roll 43,831 were in receipt of \$20 per month; 34,526, \$25 per month; 27,663, \$30 per month; 16,228, \$40 per month; 12,971, \$50 per month; and 846, \$72 per month, the rate for such condition of helplessness as necessitates aid and attendance of another person. The rate of pension paid to widows is \$30 per month with

\$6 per month additional in respect of each child of the soldier under 16 years of age.

Other Payments.—On account of disabilities incurred in line of duty in the military and naval service in time of peace and deaths of soldiers due to service-connected causes, \$3,818,072.22 were disbursed in the past fiscal year. Soldiers and widows, pensioned on account of Indian War services, received \$2,013,765.42. Although 79 years have elapsed since the close of the War with Mexico, there are yet six soldiers who served in that war on the pension roll and 970 widows of such soldiers and they received \$568,966.23. The close of the fiscal year 1927 also showed 17 widows of soldiers who rendered service in the War of 1812, and to these pension amounting to \$9,805.66 was paid.

Legislation.—In the fiscal year, 1927, new legislation was enacted by the Congress, granting pension and increase of pension to soldiers, widows, minor children, and remarried widows, on account of 30 days' service in any Indian War or campaign or in connection with, or in the zone of any Indian hostilities from January 1, 1817, to December 31, 1898. The rates payable to soldiers range from \$20 to \$50 per month according to degree of disability or attained age. For widows the rate is \$30 per month with \$6 per month additional for each child of the soldier under 16 years of age. The Congress also granted increased rates of pension in cases of certain maimed soldiers and passed special acts benefiting 5,375 individuals.

Claims.—On July 1, 1926, there were pending before the Bureau 43,664 claims. During the year 188,780 claims were received and 160,756 claims were disposed of, leaving 71,688 claims pending at the close of the fiscal year, 1927. Of the claims disposed of 75,018 were on account of Civil War service and 56,153 on account of Spanish War service. There were issued during the year 94,016 pension certificates.

Cost of Pension System.—The total cost for maintenance and expense of the pension system for the last fiscal year was \$1,327,252, of which

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amount \$1,272,917 were expended for salaries of employees. The number of employees at the close of the year

was 677, as against 725 at the beginning of the year, a net reduction of 48 in the working forces.

UNITED STATES VETERANS BUREAU

By FRANK T. HINES

DIRECTOR, UNITED STATES VETERANS BUREAU, WASHINGTON

ORGANIZATION

Statute.—The United States Veterans Bureau is an independent bureau, established under the act of August 9, 1921. The act provided that all forms of veterans' relief previously delegated to the Federal Board for Vocational Education, the U. S. Public Health Service and the Bureau of War Risk Insurance should be delegated to one bureau to be known as the United States Veterans Bureau, to be directly responsible to the President of the United States.

The Organization of the Bureau subsequent to August 9, 1921, and prior to June 7, 1924, consisted of a central office, fourteen district offices and a limited number of sub-offices subject to the several district offices. The act of June 7, 1924, provided for a decentralization of the Bureau's activities by authorizing the establishment of not more than one hundred regional offices. In compliance with the provisions of the act of June 7, 1924, fifty-four regional offices were established in a principal city of each state with the exception of Delaware, and two offices were established in the states of California, Missouri, New York, Ohio, Pennsylvania and Texas.

The Functions of the Bureau as now provided for by Congress are as follows:

1. The adjudication of claims for compensation filed by disabled veterans or dependents of deceased veterans of the World War.
2. The hospitalization and medical care of disabled veterans.
3. The re-training of veterans who suffered a vocational handicap as a result of their service in the World War, who are in need of such re-training.
4. The maintenance of insurance records of all veterans who have applied for insurance and are maintaining current premiums thereon, and the adjudication of

all claims filed on account of such insurance.

5. Administration of the World War Adjusted Compensation Act.

Compensation Awards.—Military and naval compensation is awarded for death or disability resulting from personal injuries received, for disease contracted, or for aggravation or recurrence of preexisting disability during or the result of military service in the World War.

As of October 1, 1927, compensation was being paid to 248,420 disabled veterans and to 83,830 dependents of deceased veterans of the World War. During the period indicated above 33,831 new claims for compensation were received by the Bureau and approximately 435,000 adjudications were made on cases previously rated. During the past twelve months the number of compensation awards has increased by approximately 18,000. This increase was due largely to legislative provisions whereby veterans suffering from tuberculosis in an arrested form, when service connected, were granted a statutory award of \$50 per month, and the review of all previous awards under the revised schedule of disability ratings.

CARE OF VETERANS

In addition to compensation benefits, the veteran of the World War with any service-connected disability is furnished with medical, surgical and hospital care. The Director of the Bureau may, when it appears necessary, supply disabled veterans with appliances such as wheel chairs, artificial limbs, trusses, etc.

In order to carry out the provision for care and treatment of the disabled veterans, the Bureau as of October 1, 1927, was operating fifty hospitals,

UNITED STATES VETERANS BUREAU

and beneficiaries of the Bureau were also being provided with care and treatment in forty-four other government hospitals and in one hundred and ninety-five civil and state institutions. The act governing the hospitalization of discharged veterans with non-service connected disabilities reads as follows: "That all hospital facilities under the control and jurisdiction of the Bureau shall be available for every honorably discharged veteran of the Spanish-American War, the Philippine Insurrection, the Boxer Rebellion, or the World War suffering from neuropsychiatric or tubercular ailments and diseases, paralysis agitans, encephalitis lethargica, or amoebic dysentery, or the loss of sight of both eyes, regardless whether such ailments or diseases are due to military service or otherwise, including traveling expenses as granted to those receiving compensation and hospitalization under this Act. The director is further authorized, so far as he shall find that existing government facilities permit, to furnish hospitalization and traveling expenses incident to hospitalization to veterans of any war, military occupation, or military expedition, not dishonorably discharged . . .

The total number of ex-service men and women who had received hospital treatment as of October 1, 1927, was 363,205, while 65,457 patients were admitted to hospitals during the past year. The number of patients remaining in the various types of hospitals utilized by the Bureau as of October 1, 1927, is as follows:

	T. B.	N. P.	General	Total
U. S. Veterans..	5,230	9,067	2,820	17,117
Other Government	1,276	1,384	2,750	5,410
Civil and State..	536	2,183	150	2,869
Total	7,042	12,634	5,720	25,396

The Bureau also provides out-patient relief in the clinics established in the field stations for veterans whose disabilities do not require hospital treatment. During the past year a total of 860,440 out-patient treatments were given, while a total of

930,574 examinations were made outside of hospitals.

GUARDIAN SYSTEM

Statute.—The World War Veterans Act provides that whenever it appears that any guardian, curator, conservator, or other person is not, in the opinion of the Director, properly executing the duties of his trust or has collected or attempted to collect fees or commissions that are inequitable or in excess of those allowed by law, or has failed to make such payments as are necessary for the benefit of the ward, the Director is empowered by his duly authorized attorney to appear and make proper presentation of such matters to the court. Under this provision, it is incumbent upon the Bureau to secure the appointment of persons properly qualified to act as guardian and to secure the removal of guardians who have demonstrated their unfitness.

Methods.—Assistance is rendered to the next of kin in qualifying as guardians of beneficiaries. When it is not possible to find a qualified next of kin to act, reputable banks and trust companies are utilized. The adequacy and solvency of guardian bonds is carefully looked into and when insufficient, recommendation is made to the court that larger bonds be required for the protection of the estate. Guardians are advised of the legal rights of their wards, in order that incompetents and minors may receive all the benefits to which they are entitled. A constant endeavor is made to reduce the guardians' commissions and attorneys' fees to a minimum. To this end regional attorneys of the Bureau, with the cooperation and assistance of service and welfare organizations, have been instrumental in securing legislation in some states reducing court costs, commissions and fees. Social surveys are made semi-annually of all minors under guardianship, for the purpose of ascertaining the manner in which funds paid by the Bureau are applied to the benefit of the ward and for the further purpose of removing any unfavorable conditions that may be disclosed. On October 1, 1927, the Bureau had under its jurisdiction 47,594

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wards, of which 25,875 are minors, 21,107 are incompetent veterans and 612 are incompetent dependents of deceased veterans.

TRAINING FOR VOCATIONS

Each honorably discharged veteran of the World War receiving compensation or suffering from a vocational handicap as a result of service and who in the opinion of the Director is in need of vocational rehabilitation was eligible for training. The act of June 7, 1924, provided that all original entrances into training would be discontinued as of June 30, 1925, and that training of all types would be discontinued as of June 30, 1926. However, the act of July 2, 1926, amended the latter provision so that all trainees in need of further training to complete a prescribed course and be placed into employment could be continued in training for a period not to exceed two years for institutional training and six months for placement training. As a result of these limitations the training program is rapidly nearing completion. As of October 1, 1927, 179,416 veterans had been inducted into training. Of this number 166 were in training, 128,526 had been rehabilitated or completed the prescribed course, and the remainder had discontinued training or died.

INSURANCE

United States Government Life Insurance is issued in any multiple of \$500, not less than \$1,000 or more than \$10,000, upon the payment of premiums at a net peace time rate, with no extra charge for administration or excess mortality due to the hazards of war. The following forms of insurance are issued: ordinary life, 20-payment life, 20-year endowment, 30-payment life, 30-year endowment, endowment at age 62, and 5-year convertible term insurance. The policies carry the usual values common to policies issued by commercial companies, such as extended insurance, paid-up insurance, cash surrenders and loans. Dividends are also paid from excess of interest earnings and savings in mortality. Under the original provision, yearly renewable

term insurance was issued. Legislative provisions required that all such insurance should be converted into one of the permanent forms enumerated above not later than July 2, 1927. During the past twelve months 199,274 veterans converted \$1,152,531,155 of term insurance.

	Number	Amount
U. S. Gov't. Life		
Ordinary Life	134,917	\$735,206,786.87
20-Paym't Life	169,102	746,753,675.61
30-Paym't Life	28,505	147,598,265.31
20-Yr. Endowment	132,351	397,340,521.41
30-Yr. Endowment	35,406	152,445,900.78
Endowment at Age 62	34,714	170,555,227.92
Extended Ins.	15,235	38,835,451.31
5-Yr. Convertible Term Ins.	94,953	666,267,574.00
Total	645,183	\$3,055,003,403.21

ADJUSTED COMPENSATION

The World War Adjusted Compensation Act, passed by Congress May 9, 1924, authorized the payment of adjusted compensation to all veterans of the World War but does not include any officer above the grade of captain in the Army or Marine Corps or similar rank in the Navy and Coast Guard. The rate of pay for service in excess of sixty days is \$1.25

ADJUSTED COMPENSATION

As of October 1, 1927

	Number	Amount
Applications Received	3,462,972	
Applications Acted Upon:		
Cash Payments.		
Veterans \$50 or less ...	111,406	\$ 3,923,327.34
Dependents \$50 or less	4,328	119,099.24
Total Cash Payments .	115,734	4,042,426.58
Dependents over \$50	75,793	27,734,516.58
Certificates ...	3,230,336	3,308,804,540.00
\$60 Lump Sum Payments .		583,930.00
Total	3,421,863	3,341,165,413.16
Death Claims Approved ...	38,958	39,750,572.00
Loans:		
Direct	329,001	30,926,050.72
By Banks	516,898	48,337,141.27
Total	845,899	79,263,191.99

ORGANIZATION OF THE ARMY

and \$1.00 per day and the amount of credit is limited to \$625 and \$500 for overseas and home service respectively. The veterans who are entitled to not more than \$50 are paid in cash, and those entitled to more than \$50 are given an adjusted service certificate in the form of a 20-year endowment insurance policy for an amount that the adjusted service credit, increased by 25%, would purchase at the age of the veteran on the birthday nearest the date of the certificate, if applied as a net single premium, calculated in accordance with the accepted actuarial principles and based upon the American Experience Table of Mortality, with interest at four per centum compounded annually. An amendment to the World War Adjusted Compensation Act authorized

the Bureau to make loans direct to the veteran; prior to the passage of this amendment, loans secured by adjusted service certificates could be made only by the banks.

The preceding table shows the applications received and adjudicated, together with the loans made under the act as amended:

Disbursements.—The total disbursements made by the Bureau or agencies now comprising it, exclusive of certain expenditures made for hospital construction under the direction of the Treasury Department, approximates \$4,021,430,369, of which \$843,607,910.45 was from funds other than those appropriated by Congress, such as insurance premiums and allotments made by men in service to their dependents.

ORGANIZATION OF THE ARMY

BY WILLIAM ADDLEMAN GANOE

MAJOR, U. S. A., HISTORICAL SECTION, ARMY WAR COLLEGE

WAR DEPARTMENT

Organization.—The War Department, as the managing agency of the military forces for the people, is presided over by the Secretary of War, a civilian, who is answerable directly to the President of the United States, the Commander-in-Chief. The Secretary (Dwight F. Davis) is assisted by the Chief of Staff (Maj. Gen. Charles P. Summerall), who oversees the military functions; by an Assistant Secretary (Hanford MacNider), who has charge of the supply, real estate and war industrial plans; and by another Assistant (F. Trubee Davison), who is responsible for fostering Military Aeronautics. Under this combined direction operate the Divisions of the General Staff and the arms and branches of the Army, whose chiefs yield advice to the Secretary of War through the Chief of Staff, the Deputy Chief of Staff (Brig. General Brian H. Wells) and the Assistant Secretaries.

THE GENERAL STAFF

Duties.—The General Staff is composed of officers who are selected

from all arms and branches of the Army, and who are developed by long training and schooling to comprehend every side of the general problems studied by them. From these studies they are required to present to their superiors broad and impartial conclusions for the best interests of the service. On the other hand, the chiefs of the combatant branches and supply and administrative departments are specialists whose force is trained to give technical and specific advice to the Secretary of War through the Chief of Staff concerning the particular conditions which confront the individual branches and departments.

None of the officers of the General Staff or heads of arms or departments enjoys the right to command. The duties of each are advisory, supervisory or administrative. The chain of command is direct from the President of the United States to the Corps Area Commanders in the matter of manipulation of the Army of the United States. The Secretary of War, however, may give orders in the name of the President, to the nine areas of control in the United States

IX. DEFENSE AND ARMAMENTS

A.—TABLE SHOWING THE STRENGTH OF THE REGULAR ARMY OF THE UNITED STATES, JUNE 30, 1926, AND JUNE 30, 1927, WITH LOSSES FROM ALL CAUSES BETWEEN THOSE DATES

Branch of Service	Strength June 30, 1926		Strength June 30, 1927		Losses														
	Officers	Enlisted Men	Officers	Enlisted Men	Enlisted Men														
					Retired	Discharged						Died							
						Relieved from Active Duty	Expiration of Service	For Disability	By Sentence of General Court-martial	Other Causes	Executed	Of Disease	Of Accident	Drowned	Suicide	Homicide			
General officers of the line...	67	...	67	...	...	...	2,560	103	113	1,044	...	16	8	1	3	...	639	4,634
General Staff Corps...	238	...	211	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Adjutant General's Department	96	...	96	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Inspector General's Department	41	...	42	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Judge Advocate General's Department	86	...	88	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Quartermaster Corps	704	7,622	701	7,794	90	...	2,560	103	113	1,044	...	16	8	1	3	...	639	4,634	
Military storekeeper	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Medical Department	1,239	6,539	1,199	6,743	32	...	1,800	121	149	1,236	...	11	2	2	4	...	792	4,214	
Finance Department	121	386	120	390	6	...	99	2	1	30	...	...	...	...	...	...	...	...
Corps of Engineers	381	4,434	396	4,646	17	...	1,280	78	88	818	...	7	3	...	1	...	9	149	
Ordnance Department	267	2,255	271	2,220	58	...	627	25	38	317	...	10	...	2	1	...	421	2,790	
Signal Corps	203	2,237	213	2,262	18	...	582	35	32	438	...	6	2	...	2	...	171	2,262	
Chemical Warfare Service	79	417	80	418	1	...	105	5	16	80	...	2	...	...	...	...	187	1,317
Bureau of Insular Affairs	3	...	3	...	...	...	...	...	...	...	...	...	...	...	...	...	52	262
Militia Bureau	41	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Chaplains	130	...	123	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Professors, United States Military Academy	7	...	8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Cavalry	622	8,183	650	8,126	52	...	2,233	100	190	1,381	...	26	7	...	3	...	1,388	5,577	
Field Artillery	986	14,552	969	14,376	29	...	3,894	243	262	2,570	...	27	14	1	4	...	1,801	9,121	
Coast Artillery Corps	736	11,590	724	11,818	75	...	3,484	176	182	2,014	...	27	4	4	2	...	892	6,977	
Infantry	2,456	40,344	2,455	39,574	158	...	12,208	636	594	6,624	...	1	80	25	11	...	4,384	25,561	
Air Corps	855	8,723	902	9,077	27	...	2,410	123	107	2,087	...	21	22	2	2	...	610	5,482	
Military Intelligence Division	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Military Police Corps	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Detached list	2,558	5,572	2,498	5,497	117	...	1,499	55	36	462	...	...	...	...	...	...	...	2,458
Total, less Philippine Scouts	11,892	112,874	11,816	113,041	680	...	32,781	1,702	1,808	19,101	1	254	92	23	38	22	11,580	1,722	69,804

ORGANIZATION OF THE ARMY

A.—TABLE SHOWING THE STRENGTH OF THE REGULAR ARMY OF THE UNITED STATES, JUNE 30, 1926, AND JUNE 30, 1927, WITH LOSSES FROM ALL CAUSES BETWEEN THOSE DATES—Continued

Branch of Service	Strength June 30, 1926		Strength June 30, 1927		Losses													
					Enlisted Men													
	Officers	Enlisted Men	Officers	Enlisted Men	Retired	Discharged				Died						Deserted	Dropped	Total
						Expiration of Service	For Disability	By Sentence of General Court-martial	Other Causes	Executed	Of Disease	Of Accident	Drowned	Suicide	Homicide			
Warrant officers : Army Mine Planter Service. Band leaders Others Total.....	40 92 1,193 1,325	... ... ... ...	40 92 1,130 1,262	... ... ... ...	... ... ... ...	... ... ... ...	... ... ... ...	... ... ... ...	... ... ... ...	... ... ... ...	... ... ... ...	... ... ... ...	... ... ... ...	... ... ... ...	... ... ... ...	... ... ... ...	... ... ... ...
Retired, on active duty : Regular Army Philippine Scouts Warrant officers Total.....	135 18 2 155	27 27	145 18 1 164	25 25	7 7	... ... ... ...	... ... ... ...	... ... ... ...	... ... ... ...	... ... ... ...	... ... ... ...	... ... ... ...	... ... ... ...	... ... ... ...	... ... ... ...	... ... ... ...	7 7
Aggregate.....	13,470	119,973	13,339 ^a	119,929	680	33,805	1,800	1,819	19,147	1	266	94	25	38	22	11,587	1,724	71,015

¹ Includes reserve officers only (Regular Army officers on duty with the Militia Bureau are included in the detached list).

² Includes warrant officers and one emergency (World War nonregular) officer undergoing treatment for physical reconstruction and 210 reserve officers on active duty.

³ Includes warrant officers.

IX. DEFENSE AND ARMAMENTS

B.—TABLE SHOWING THE STRENGTH OF THE REGULAR ARMY

Branch of Service	July, 1926		August, 1926	
	Officers	Enlisted Men	Officers	Enlisted Men
General officers of the line.....	67	...	67	...
General Staff Corps.....	217	...	212	...
Adjutant General's Department.....	97	...	97	...
Inspector General's Department.....	39	...	39	...
Judge Advocate General's Department.....	85	...	85	...
Quartermaster Corps.....	699	7,595	698	7,617
Military storekeeper.....	1	...	1	...
Medical Department.....	1,217	6,545	1,222	6,609
Finance Department.....	121	396	121	399
Corps of Engineers.....	378	4,385	381	4,408
Ordnance Department.....	266	2,222	265	2,197
Signal Corps.....	205	2,268	204	2,302
Chemical Warfare Service.....	76	412	76	402
Bureau of Insular Affairs.....	3	...	3	...
Militia Bureau.....	...	...	...	...
Chaplains.....	125	...	125	...
Professors, United States Military Academy.....	8	...	8	...
Cavalry.....	608	8,252	604	8,354
Field Artillery.....	942	14,234	939	14,207
Coast Artillery Corps.....	716	11,504	715	11,577
Infantry.....	2,410	40,085	2,399	40,070
Air Corps.....	857	8,768	861	8,867
Detached list.....	2,558	5,515	2,555	5,476
Total, less Philippine Scouts.....	11,695	112,181	11,677	112,485
Philippine Scouts:				
Judge Advocate General's Department....	1	...	1	...
Quartermaster Corps.....	10	478	10	469
Medical Department.....	...	382	...	383
Finance Department.....	...	8	...	8
Corps of Engineers.....	4	327	4	328
Ordnance Department.....	...	49	...	49
Signal Corps.....	4	152	4	152
Cavalry.....	6	698	6	687
Field Artillery.....	9	991	9	979
Coast Artillery Corps.....	11	1,591	11	1,566
Infantry.....	49	2,389	49	2,382
Air Corps.....	1	...	1	...
Detached list.....	2	...	2	...
Total.....	97	7,065	97	7,003
Grand total.....	11,792	119,246	11,774	119,488
Warrant officers:				
Army Mine Planter Service.....	40	...	40	...
Band leaders.....	91	...	92	...
Others.....	1,184	...	1,179	...
Total.....	1,315	...	1,311	...
Retired, on active duty:				
Regular Army.....	133	25	133	28
Philippine Scouts.....	17	...	17	...
Warrant officers.....	2	...	1	...
Total.....	152	25	151	28
Aggregate.....	13,259	119,271	13,236	119,516

proper and to the four in other parts of the world.

Commands.—The General Staff consists of five Divisions, composed of officers of the Regular Army, National Guard and Organized Reserves.

The G-1 Division (Brig. Gen. Campbell King, Assistant Chief of Staff, G-1) is concerned with personnel, the man-power of the Army and nation. The G-2 Division (Colonel Stanley H. Ford, Assistant Chief of Staff, G-2)

is concerned with world-wide information, collecting, evaluating and treating it much in the same manner as expert historians. The G-3 Division (Brig. Gen. Frank Parker, Assistant Chief of Staff, G-3) is concerned with the operation of the Army, especially in education and training. The G-4 Division (Brig. Gen. Ewing E. Booth, Assistant Chief of Staff, G-4) is concerned with the housing and maintenance of the Army. The War Plans Division (Brig. General George S. Simonds, Assistant Chief of Staff, W. P. D.) is concerned with the up-to-date defense of our coasts and possessions at any point of possible attack.

ADVISORY BODIES

Combatant.—Other advisory bodies for the Secretary are the offices of the chiefs of the combatant arms and heads of departments and services. The combatant branches are: the Infantry (Major General Robert H. Allen, Chief); the Cavalry (Major General Herbert B. Crosby, Chief); the Field Artillery (Major General William J. Snow, Chief); the Coast Artillery (Major General Andrew Hero, Jr., Chief); the Air Corps (Major General Mason M. Patrick, Chief); the Corps of Engineers (Major General Edgar Jadwin, Chief); Signal Corps (Major General Charles McK. Saltzman, Chief).

Non-Combatant.—The non-combatant branches are: the Adjutant General's Department (Major General Lutz Wahl, the Adjutant General); the Inspector General's Department (Major General William C. Rivers, the Inspector General); the Judge Advocate General's Department (Major General John A. Hull, the Judge Advocate General); the Quartermaster Corps (Major General Frank B. Cheatham, the Quartermaster General); the Finance Department (Major General Kenzie W. Walker, Chief); the Medical Department (Major General Merritte W. Ireland, the Surgeon General); the Ordnance Department (Major General Clarence C. Williams, Chief); the Chemical Warfare Service (Major General Amos A. Fries, Chief); officers of the Bureau of Insular Af-

fairs (Major General Frank McIntyre, Chief); and officers and enlisted men of the Militia Bureau (Major General Creed C. Hammond, Chief).

CORPS AREAS

For command and control the Army is spread as follows: First Corps Area, including Maine, New Hampshire, Vermont, Massachusetts, Rhode Island and Connecticut, is commanded by Major General Preston Brown; Second Corps Area, including New York, New Jersey, Delaware and Porto Rico, by Major General James H. McRae; Third Corps Area, including Pennsylvania, Maryland, Virginia and District of Columbia, by Major General Douglas MacArthur; Fourth Corps Area, including North Carolina, South Carolina, Georgia, Florida, Alabama, Tennessee, Mississippi and Louisiana, by Major General Richmond P. Davis; Fifth Corps Area, including Ohio, West Virginia, Indiana and Kentucky, by Major General Dennis E. Nolan; Sixth Corps Area, including Illinois, Michigan, Wisconsin, Jefferson Barracks and Arcadia Target Range, Missouri, by Major General William Lassiter; Seventh Corps Area, including Missouri (Arcadia Range excepted), Kansas, Arkansas, Iowa, Nebraska, Minnesota, North Dakota and South Dakota, by Major General Harry A. Smith; Eighth Corps Area, including Texas, Oklahoma, Colorado, New Mexico and Arizona, by Major General Ernest Hinds; Ninth Corps Area, including Washington, Oregon, Idaho, Montana, Wyoming, Utah, Nevada, California and Alaska, by Major General John L. Hines; the Hawaiian Department by Major General William R. Smith; the Philippine Department by Major General Fred W. Sladen; the Panama Canal Department, by Major General William S. Graves; and the U. S. Army Forces in China, by Brig. General Joseph C. Castner. These areas and departments are subdivided into tactical divisions and brigades.

OTHER DEPARTMENTS

Directly under the supervision of the Secretary of War, but not belong-

IX. DEFENSE AND ARMAMENTS

ing to the Army, come the activities of Insular Affairs, Panama Canal, Inland and Coastwise Waterways, River and Harbor improvement and other civil work, such as administrative duties in the District of Columbia, largely performed by members of the Army personnel.

ARMY STRENGTH

The strength of the Army of the United States on June 30 was: Organized Reserves, 102,164 officers and 5,601 enlisted men; National Guard, 12,010 officers and 169,132 enlisted men; the Regular Army, 11,816 officers, 119,929 enlisted men.

ACCOMPLISHMENTS OF ARMY PERSONNEL

By WILLIAM ADDLEMAN GANOE

MAJOR, U. S. A., HISTORICAL SECTION, ARMY WAR COLLEGE

PUBLIC SERVICE

Contribution of the Soldier.—The services of the soldier to the country formed no exception in 1927 to the vast reach of his helpfulness in peace and war throughout the history of the United States. His accomplishments in industrial, philanthropic and commercial endeavors as ever placed him in the forefront of progressive activities of the nation. From the purely military to the purely scientific he has lent signal efforts toward the advancement of nearly every profession and business. From the aid given flood sufferers to the moral uplift afforded citizen's military camps, he has touched in on nearly every avenue of onward looking America with specific help. He has done so while keeping abreast of the most advanced knowledge of military art and science. Counting the actual savings in dollars turned back to the Treasury by the military man, his low salary and wage for the kind of work he does, the tremendous amount of service performed for other departments and in non-military activities, the soldier more than pays for himself.

General Wood.—In 1927, Governor General Leonard Wood of the Philippine Islands, former Chief of Staff, U. S. Army, returned to the United States where he shortly died. The personality, patriotism, and zeal of this man had laid their impress of him upon that country as a great administrator. Other military administrators and soldiers had previously aided him in bringing those islands to a state of definite progress.

In spite of the handicaps of mandates which withheld public lands from beneficial use and barred incoming labor to the islands so that the introduction of foreign capital was difficult, the finances of the Philippines are in excellent shape. Without the Army in general and the military man in particular, it is evident such a splendid condition could not exist.

QUARTERMASTER CORPS

Mississippi Flood Aid.— This seemed to be the only agency in the country that was able immediately to send supplies in any quantity to the sufferers of the Mississippi flood. By its readiness and promptness this branch of the Army did so to the amount of \$2,634,494.78. A total of 23,586 pyramidal tents, enough to shelter 243,000 people, and 109,564 blankets were some of the items given and distributed. A force in the principal supply depots and in the office of the Quartermaster General met calls day and night. The heads of the Corps arranged with the railroad for free transportation of these supplies, so that carloads were rushed by passenger schedule from Boston, Chicago, Jeffersonville, Philadelphia, Columbus, New Cumberland, Schenectady and New York City to distributing points at St. Louis, New Orleans and Camp Jesup, Ga. The category of supplies sent in this emergency runs the gamut from stoves to post-hole diggers. Nearly all of these were a total loss to the Corps for which it has not as yet received reimbursement.

New England Floods.—During the floods in New England in November, it was a wagon train of Army mules which made its way over the narrow pass through the Green Mountains, made dangerous and difficult by the snow that had fallen, and was the first to reach Montpelier with supplies of food and clothing for the sufferers. A few days later, when a twister devastated portions of Virginia, the city of Washington, and Maryland, it was the quartermaster storehouse at Fort Myer, Va., which furnished cots and blankets for the use of the refugees in Alexandria, Va.

Horse Breeding.—The Army has inaugurated the largest horse breeding operation in the world. It is carried on by the Remount Service of the Quartermaster Corps in accordance with an authorization of Congress, and in cooperation with the American Remount Association. The central feature of the plan is to place pure-bred stallions of proper riding type at the service of farmers and breeders willing to assist in the production of riding horses of the proper quality, and who are located in communities where mares of suitable type are available. The service of stallions, delivered at Government expense to local agents who arrange for service and collect the fees therefor, is furnished at a nominal fee. A local horseman or farmer in good standing in the community and interested in breeding is usually selected as agent. With 183 stallions in 1921, 247 in 1922, 285 in 1923 and 350 in 1924, there are at this date over 500 excellent stallions available for the use of the farmers and breeders of the Nation for the 1928 breeding season. During 1921 to 1925, inclusive, over 40,000 mares were bred to remount stallions. It is estimated that not less than 15,000 mares will be bred during the 1928 breeding season to 450 stallions, and the foal production, judging by past standards, should be in excess of 9,000, valued conservatively at \$170 each at four years old, or an approximate total value of over a million and a half dollars.

Transport.—This Corps in the operation of transport service carried

51,240 passengers, 277 animals, 161,491 tons of freight and 911,997 pounds of mail at a net saving to the Government of \$2,344,550.99 over the cost of commercial steamers. A loan of 691 War Department vehicles was made to the Post Office Department to deliver Christmas mail (1926) at a saving to that Department of \$100,456.62. By operating its own repair shop, by salvaging and using old war material, sale of waste, transport of its own fuel oil and gas, development of a new fire truck, this corps has saved the United States during 1927 approximately \$3,000,000.

AIR CORPS

Good Will Flight.—Besides the air schooling contributed by the Air Corps, it had a far-reaching effect upon the prestige of the United States. Five amphibian planes with ten officers left San Antonio, Texas, December 26, 1926, and proceeded through Mexico, Central America, along the west coast of South America, across the Andes, up the east coast of South America, through the principal islands of the Caribbean to Florida, and back along the east coast of the United States to Washington, covering 22,065 miles and 263¼ hours of flying time. The planes visited every country south of the Rio Grande and the insular possessions of three European powers, a route never before covered by aircraft. Invaluable information was collected for the War Department as well as for civil aeronautics. The comparatively meager publicity in the United States gave no idea of the importance attested to by the press and the tremendous interest of the countries passed through in the Good Will Flight.

Honolulu Flight.—Almost as noteworthy and constructive was the remarkable flight of two Army Air Corps pilots in a three-motored transport from San Francisco without stop to Honolulu. The distance of 2,437 miles was the longest over-water flight ever made. The plane was the first flying equipment delivered by air from the mainland of the United States to its island posses-

IX. DEFENSE AND ARMAMENTS

sions. The feat demonstrated the vulnerability of the United States to bombardment within a day or a little over from Europe or other place as near or nearer, as well as the possibility of reenforcing our distant possessions by aircraft. For all aviation the flight showed the first practical use of the Army's invention, the radio beacon, which promises to be the most important aid to aerial navigation yet devised.

First Pursuit Group Flights.—In addition to this flight, the Army's First Pursuit Group in the dead of winter went from Detroit to Ottawa. The planes were equipped with skis instead of wheels, so as to land upon ice and snow. Not only did this Group show its power to operate in extreme cold but proved later its great mobility by going from Mount Clemens, Mich., to San Antonio, Tex., in a day.

Other Feats.—In the lighter-than-air fields an officer ascended in a balloon to an altitude of 42,470 feet, the highest ever reached by man. For the joint maneuvers in Texas in May, 109 planes left their airdromes in different parts of the United States under very unsatisfactory weather conditions and 108 of them arrived on schedule time. The total mileage to, at and from San Antonio was approximately 475,000 miles. During the Mississippi flood the 154th Observation Squadron of the National Guard worked continuously, as did planes from Kelly and Bolling Fields. In addition to carrying messages and serums and locating persons cut off by the flood, army planes made a photographic map of the flood zone for preventive work at the request of the River Commission.

SCIENTIFIC SERVICE

The Signal Corps in its developments along many lines has aided commerce and transit. Outstanding in its usefulness is the radio beacon which did so much for the Dole and other flights. A radio beam sent out from San Francisco and the island of Maui guided the fliers who kept in the center of the beam, across the wide stretch of the Pacific to Honolulu.

Another achievement of the Corps was the release to commercial aviation of the use of a new radio set known as SCR-134, which provides the use of both radio telegraphy and telephony. So useful was the device found that the Department of Commerce requested the drawings of it for general use.

The Signal Corps radio net for various departments of the Government handled 306,718 official despatches heretofore transmitted by commercial companies. The result, after operating expenses were deducted, was a public saving of \$179,624.68. In Alaska the army radio stations and cable system to Seattle earned from the people of that territory \$287,921.25, which was turned into the U. S. Treasury. Counting the free official despatches sent for governmental bureaus, the total earning power for the United States amounted to \$428,484.19.

This corps extended during the year its meteorological information to flying fields and came to the fore in breeding and training homing pigeons. In the latter field in three competitions among 1600 contestants 146 pigeons, all that were entered, took 27 first, 4 second and 4 third prizes.

Chemical Warfare Service, though it devoted its main attention for the year to chemical warfare equipment and supplies for the army, kept intimate touch with industry and science for the purpose of developing improvements for public use. Contacts were so maintained that a hundred of the foremost technical experts of the United States served as consultants. In that way such outstanding achievements as individual and collective protection against chemical agents, development of a method of distribution of chemical agents from airplanes and decisive results from boll weevil investigation were possible. (See also *THE AMERICAN YEAR BOOK* for 1926.)

In the line of industrial preparedness, requirements were computed on 140 items which had not before been so treated. Surveys were made of 22 commercial plants, schedules of production were placed on 93 items and

there were prepared, cleared by industry and approved, 95 specifications.

TECHNICAL SERVICE

The Ordnance Department has made greater progress in the advancement of weapons and searchlights in the last two years than in the entire period between the war and 1926. Especially has the anti-aircraft effectiveness and control been developed. A central device for computing data at the battery commander's station and transmitting it to the guns and batteries themselves has been perfected. Tests of the receiver sight, pistol grip stock and rust resisting steel for the rifle promise improvements in that weapon. On October 6th, the Ordnance Association gave exhibits and demonstrations for a day at Aberdeen Proving Ground, Md., of the latest developments in defense machinery. The exposition was arranged in conjunction with the Society of Automotive Engineers, The American Society for Testing Materials, The Military Order of the World War and the Quartermaster Association. The program was participated in by the Ordnance Department, Quartermaster Corps, Field Artillery, Coast Artillery, Air Corps, Signal Corps, Corps of Engineers, Infantry and Chemical Warfare Service. In the exhibition and operation of the many devices, weapons and projectiles was a demonstration of anti-aircraft night-firing against a towed target by the 61st Anti-Aircraft Regiment, which used the latest types of guns, searchlights and fire-control equipment.

The Infantry has made recently considerable progress in protecting the foot-soldier from aircraft. A new mount for the caliber .30 machine gun now permits the weapon to be carried on the march ready either for ground or anti-aircraft firing, increases stability for normal firing and permits rapid shifting of fire from ground to air targets and the reverse. Fire from the time of warning can be brought to bear in a minimum of $3\frac{1}{2}$ seconds. The new mount being built upon the present one, of which there are great stores on hand, is highly economical in pro-

duction. Though not finally tested and approved it now fulfills its missions on the ground and in the air far better than anything yet developed in America.

Protection of infantry against aircraft has been strengthened by research and experiment since the World War to such an extent that discipline and special training of troops in future will doubtless eliminate demoralization and lessen casualties in the proportion that troops are disciplined and trained. Soldiers must be taught that an attack by aircraft is so sudden that movement of troops from the danger area is impossible, that the remedy is to fight back at once instead of seeking cover from fire, that a direct hit from overhead is rare, that danger lies in the horizontal propulsion of fragments after the bomb has burst and that the effect of an air attack is mostly moral—a fear of something apparently inescapable.

Improved methods of transportation with increased confidence in the ability of transportation to bring supplies to troops when needed has permitted a decrease in the back-breaking load of 79 pounds, carried by the foot-soldier during the World War, to 51 pounds. The latter weight is to be habitually carried. When the soldier goes into combat, the pack, of course, is dropped but presumably at the same time an increased supply of ammunition will be furnished him. Such articles as overcoat, extra shoes and extra ammunition are carried in the trains and issued when required.

The war organization for machine guns in the infantry regiment has been changed during the year by increasing the number of machine guns from 24 to 36—the ratio to rifles being 1 to 45 instead of 1 to 60 as heretofore.

Rifle practice has shown a progressive improvement since the World War. During 1926, of the 27,341 men borne on the rolls of infantry regiments, 22,260 qualified over the marksmanship course, making a percentage of 91.6. Of those firing machine guns 96.27% were qualified; and similarly for the 37 mm. and 3-inch

IX. DEFENSE AND ARMAMENTS

trench mortar, 99.2%. The United States Infantry Rifle Team, firing in the National Matches in September, 1927, won the national championship for team firing by scoring 2,838 points out of a possible 3,000. The course included the ranges of 1,000, 600, 300 and 200 yards, with a variety of positions and rates of firing. A phenomenal record was made by Sergeant William E. Bissenden, 8th Infantry, by scoring 294 out of a 300 possible points, a world's record over this course.

The Cavalry during the year has developed improvements in organization, armament and power. The regiment has been increased in its number of enlisted men by 49 and lessened in number of troops by two. The effort was to devise a unit tactically sound, free from unnecessary overhead and easy of expansion in war by the addition of troops in the squadron. Machine gun troops will be a part of the regiment instead of the brigade and will give the unit tremendous fire power and will contain for the first time an anti-tank section. The division has added to it air service and a light tank company. Eventually it is supposed to have an armored car troop. This branch realizes that cavalry must employ mechanical devices to increase fire power and meet the many agencies developed in the last decade.

During the Cavalry Division maneuvers in September, experiments were made in transporting cavalry units by motor trucks with much success. Long distances were practicable by this means so that the radius of action of the arm is largely increased, small units can be entrucked to distant points and can arrive fresh for combat. The Cavalry Board has tested improvements in automatic pistols, a sight for the rifle, a saber, two types of semi-automatic shoulder rifles, gas masks for horses, a reconnaissance car and a new cavalry saddle.

The Field Artillery, charged with the two major functions of technical training of its personnel in the Army and with the development, in co-operation with the Ordnance Department, Signal Corps and other army

supply agencies, of more effective materiel, has kept abreast of the increasing complexities of modern warfare during the year. The Field Artillery Board, composed of eight experienced officers, stationed at Fort Bragg, N. C., have at the end of 1927 some 49 different projects under examination and experimentation. Among them are sound ranging, artillery reels, high burst ranging, effect of fire, 155 mm. gun, 8-inch howitzer, 4.7 inch gun, tractors, shell penetration, equipment, tools for tractor drivers, Fordson tractor, defense against low-flying aircraft, type EE telephones, F. W. D. trucks, Coleman trucks, McCormick-Deering tractor, radio set SCR 109-A, automatic pistol, firing by means of aerial photographs and porter equipment for 155 mm. howitzer.

The Coast Artillery Corps, originally organized for the service of armament in coast and land fortifications, is now charged with fire on naval and aerial targets. This mission calls for the assignment of guns in permanent emplacements, of railway and heavy drawn tractor artillery intended primarily for use in coastal operations and anti-aircraft weapons of all types. During the World War Coast Artillery units manned the larger caliber trench mortars and this assignment continues on paper though no units are maintained on an active status at present. It is charged also with the procurement, supply and operation of controlled submarine mines and, in conjunction with the Field Artillery, with the development of sound ranging. The peace-time activities of the Coast Artillery pertain to training and to development of materiel.

Due to the reduced strength of the home garrisons, to the participation in development of materiel, and to the necessity for supervising the training of the other components in the United States the most consistent training in the Coast Artillery service is to be had in our foreign garrisons. The rapid rate of change of personnel insures that the latest improvements in method as developed in the larger garrisons become available for the skeletonized units in the

ACCOMPLISHMENTS OF ARMY PERSONNEL

United States; at the same time information as to the latest developments in materiel are made available by this interchange of personnel to the foreign garrisons.

The battery training, fiscal year 1927, shows in general increased accuracy at increased ranges for all types of artillery manned, especially marked for the anti-aircraft, where the latest improvements made by the Ordnance Department have resulted in firing at altitudes over 13,000 feet with a satisfactory percentage of hits and at an increased rate of fire. Eighty shots per minute from the modern anti-aircraft battery is about the present expectancy for the rate of fire. Improved fire control instruments have resulted in the practical elimination of the "dead time" and in the possibility of predicted fire on aircraft following curved courses. In addition there has been improvement in sound ranging so as to reduce the error in locating the center of the firing battery from about 75 to about 25 yards, in the adoption of certain standard instruments for the long range seacoast batteries, in an improved searchlight of about twice the power of those previously used, and in the development of a single wire system for controlled submarine mines.

Joint Army and Navy exercises have been held in Manila and Subic Bays, in the Panama Canal Department, at San Francisco, and in the Narragansett Bay Area. In addition extensive maneuvers have been held by some of the anti-aircraft regiments to test new training regulations governing the tactical employment of anti-aircraft artillery.

The Adjutant General's Department, responsible mainly for the administrative functions of the Army, has varied duties in addition. In its recruiting work it has taken account of desertions especially with the view to decreasing the rate. Intelligence tests for recruits were introduced experimentally this year in each corps area, in addition to other precautions enjoined upon recruiting personnel. Greater care has been taken in the selection of recruits, with the result that the decrease in desertions was

more pronounced. The losses from all causes among enlisted men during the year aggregated 71,015. As there were 119,929 enlisted men in the Army on June 30, 1927, and 71,015 others had been separated from the service during the preceding twelve months, 190,944 represents the total number of enlistment contracts in force during the year. Based upon this figure the percentage of reported desertions for the year is 6.07 as compared with 7.26 for the previous fiscal year.

In its other phases of work, the Department was able to aid activities outside of the War Department. As an example, calls from the United States Veterans Bureau, including those made by telephone, for information from the World War records approximated 250 daily. The time elapsing between the receipt of the requests and their completion and return to the Veterans Bureau, for a typical month, shows that 4% of the cases are completed and dispatched within 7 hours after receipt, 30% within 24 hours, 85% within 48 hours, and 97% within 72 hours. This expedition was accomplished through up-to-date business methods in spite of loss of 14% of the Department's personnel during the year.

The Finance Department is not only the agency through which the War Department pays its personnel and bills for supplies and services, and audits the Property Accounts of its accountable officers, but its chief is also the Budget Officer for the War Department and in that capacity is charged with the compilation and submission of the estimates for funds of the several branches and services to Congress through the Bureau of the Budget. All disbursing Officers' accounts are sent in monthly to the Office of the Chief of Finance where they are given an administrative examination and then sent to the General Accounting Office for final settlement. For the Fiscal Year 1927, there was appropriated for the War Department \$357,471,994.49 and the Finance Department disbursed of this amount a total of \$273,860,304.43 on 779,059 vouchers. This enormous volume of work was accomplished by 129

IX. DEFENSE AND ARMAMENTS

officers and 385 enlisted men, and 620 civilian employees. Due to greater efficiency in methods, there has been a steady reduction in personnel of the Finance Department since the end of the World War.

In 1920, when the Finance Department was organized as a separate branch there were 2,967 civilian employees (516 Departmental, 2,451 Field) and today there are only 812 (192 Departmental, 620 Field). In 1920 the 2,451 civilian employees handled 407,182 vouchers. In 1927 the 620 civilian employees handled 779,059 vouchers.

The Judge Advocate General's Department, in its three sections of military justice, military affairs and civil affairs, handled a wide range of legal matters. In the Military Justice Section, where records of cases are scrutinized to see that the trial was legal, the evidence sufficient to convict and the sentence in accordance with the punishment prescribed by law, there were reviewed during the year the records of over 5,000 courts-martial. In the Military Affairs Section, there were handled questions of administration, policy, legalities involving military personnel, opinions on the application of existing law to Army Regulations and National Guard Regulations and proper drafts of bills for proposed legislation.

The Civil Affairs Section, whose business it is to take care of non-military affairs such as legality of contract, titles and jurisdiction of military lands, rivers and harbors' legalities, participation in Mississippi flood control, bridge building permits, examination and approval of bonds, preparation of briefs for submission to the Controller General, Affairs of Insular Governments in suits appealed to District Courts and Supreme Courts, defended during the year 70 such cases. Philippine questions regarding the interpretation of the organic laws of the Philippine Islands are handled in this section. During the past year the now famous decision, on the so-called "Boards of Control Case" was promulgated. Since all War Department patent matters are in charge of the Judge Advocate General, not only does he

obtain patents, but defends suits filed against the United States for infringements or use of patents. Such suits to the number of 54 are now pending in which the sums claimed aggregate \$665,000,000.00. During the year the Department defended 15 patent suits, in nine of which judgment was rendered in favor of the United States in the sum of \$2,300,179.12, and in six of which judgment was against the Government in the sum of \$884,058.00.

The records of all the various agencies established to settle World War contracts are in the Office of the Judge Advocate General. These contracts are still the subject of much litigation. The officers in the Civil Affairs Section assist the Department of Justice in defending suits filed and in preparing the record for trial and assisting at the trial. There are pending in the courts approximately 330 such cases, in which about \$35,000,000 is claimed. During the year this office assisted in the defense of 219 war claims cases, in 167 of which judgments in favor of the United States aggregated \$2,500,000; and in fifty-two of which, where the amounts claimed totalled \$4,530,334.14, judgments against the Government totalled \$199,376.57.

The Inspector General's Department, during the year, has inspected the Army with reference to instruction, disciplinary training, morale, trials, desertions, education, recreation and welfare work, arms and equipment, uniforms and clothing, enlisted men's clothing accounts and settlements, preparation of the food and the system of messing, care of the men's feet, fitting of shoes and supply of footwear, housing, sanitation, hospitalization and care of the sick, guard duty and service calls; care of animals, their feeding, watering, grooming and veterinary treatment; wheeled transportation; especially the care and use of motor vehicles; care, issue and sale of subsistence stores; care, use, warehousing and inventorying of, and accounting for public property; unserviceable property for condemnation, salvage activities and disposition of waste; facilities for laundering, bath-

ing and swimming; operation of ice plants, proficiency of commands in fire drill; post exchanges, money accounts of all disbursing officers, and the management and application of unit funds; records and unnecessary paper work.

The inspection included posts, harbor defenses and camps; depots, arsenals and armories; laboratories and proving grounds; general hospitals, remount purchasing and breeding headquarters, the U. S. Military Academy and the general and special service schools; recruiting stations, corps area and division headquarters; Army transports, mine planters and cables; the U. S. Disciplinary Barracks, and military convicts in the Leavenworth Penitentiary; national military parks, national monuments and national cemeteries; U. S. Soldiers' Home, D. C., and the headquarters, general depot and the ten branches of the National Home for Disabled Volunteer Soldiers, and in some corps areas the annual armory inspection of the National Guard. The department inspected during the year 418 accounts of disbursing officers and more than 500 posts, camps, stations and transports. In addition numerous special inspections and investigations were made—the office in Washington alone completing 19 investigations.

The Medical Department. — The malarial rate was the lowest in the history of the Army. Despite an increase in flying and related air activities the death rate from airplane accidents was the lowest since 1917. Much of this happy result can be attributed to the careful supervision constantly exercised by flight surgeons over all aviators. There has been no interruption in the steady decline in venereal diseases. An epidemic of influenza and other respiratory diseases in the first four months of the calendar year caused a slight increase in the morbidity and mortality rates over those of the previous year. The compulsory annual physical survey of officer personnel has shown highly satisfactory results. Many obscure and minor affections have been detected and corrected.

In the field of scientific research offi-

cers of the Medical Department have again made signal contributions. An outstanding achievement was the work of an officer of the Veterinary Corps in the Philippines on rinderpest, a disease which for many years has caused a high mortality among water buffaloes (carabaos), the beasts of burden and sole reliance of the native population in their agricultural pursuits. A prophylactic vaccine has been modified and perfected by this officer which will immunize these animals and other cattle against the ravages of this disease.

An officer of the Medical Corps has also conducted experiments of far-reaching importance to the peoples whose staple article of diet is rice. The eating of overmilled rice, deficient in vitamins, has been a prolific source of beriberi and other nervous affections among natives of tropical countries. These latest researches have disclosed the interesting fact that under-milled rice which has been stored for a long time is subject to depredations by insects that eat the vitamine containing external layers of the grain and that, in order to prevent deficiency diseases, careful attention must be paid in the future to the proper storage of this cereal.

The Militia Bureau eliminates the work of the National Guard, the Chief of which is appointed by the President from the Guard's personnel. The organization is maintained by the states with the aid of grants from the Federal Government. The Guard made unprecedented progress in its training and efficiency during the year in spite of the fact that it has actually less training activities and time than it had prior to the war. Its contribution to relief work, in addition to its work of training, has during the floods, tornadoes, fires and explosions during the year been a thing of vast value to the country and valuable only because the Guard had accepted discipline and training.

The Chaplains Corps shows a record for its 123 officers of remarkable results. The following compilation for the fiscal year 1927 gives a striking concept of the number and the types of formal services conducted for and within the Army:

IX. DEFENSE AND ARMAMENTS

	Number of Services Held	Total Attend- ance
Catholic masses	1,699	204,931
Catholic benedictions ...	46	1,442
Morning services, Protes- tant	3,356	274,108
Evening services, general.	4,069	709,019
Sunday school	4,662	231,349
Bible classes	320	12,008
Guardhouse services	1,136	30,009
Hospital services	244	5,419
Joint services	273	38,546
Week night services.....	3,377	153,571
Services by civilian min- isters:		
Catholic	1,549	94,665
Protestant	251	21,426
Jewish	226	4,085
	21,208	1,780,578

Marriages	581
Baptisms	1,079
Funerals	1,283

The Bureau of Insular Affairs.—The Secretary of War visited Porto Rico in the spring, inspected the Army troops there and went extensively over the Island. Army engineers have approved plans and specifications for the bulkhead construction in connection with the improvement of Ponce Harbor. The task must be provided for by local interests as one of the items of compliance with the conditions of cooperation imposed by the act of adoption of the project, which calls for the dredging of Ponce Harbor and the construction of sea walls. Ponce has recently sold \$200,000 of bonds of an authorized issue of \$600,000, with a view of initiating work on the bulkheads. The cost of the sea walls and dredging, which is estimated at \$500,000, will be borne equally by the United States and local interests.

The Receivership of Customs of Santo Domingo is administered under the direction of this Bureau. The most significant happening during the year has been the repayment of the loan of \$20,000,000 contracted in 1908 to run until 1958. This repayment of the loan thirty-one years prior to the date of maturity is evidence of the efficient manner in which the Receivership has been conducted. The principal object of the loan was the adjustment and settlement of the

outstanding indebtedness of the Dominican Republic. The claims presented had a face value of more than \$35,000,000. The debt was adjusted for something less than \$18,000,000, and a considerable surplus from the proceeds of the loan was made available for public improvements to aid the progress of the country and the development of its latent resources. The General Receiver of Dominican Customs states that it was the first participation of the kind by American interests in the fiscal affairs of the Caribbean countries.

PANAMA CANAL

The Panama Canal, while not a part of the War Department, is under the personal supervision of the Secretary of War, and its present Governor is Brigadier General Meriwether L. Walker, Engineers Corps, U. S. Army. From the opening of the Canal to commerce on August 15, 1914, up to June 30, 1927, a total of 40,377 commercial vessels with an aggregate Panama Canal net tonnage of 174,677,954 have been transited.

The gross transit revenues of the Canal to June 30, 1927, including tolls, taxes, licenses, fees, and postal receipts, amounted to \$169,081,920.81. The net corresponding expenses totaled \$95,077,644.54, leaving a net surplus of \$74,004,276.27. In addition, for the same period the business operations of the Canal, comprising the furnishing of various services and supplies to outside interests, mainly to shipping, showed a net surplus of revenues over expenses amounting to \$5,949,599.26. As compared with the fiscal year 1926, the number of vessels using the Canal during the fiscal year 1927 (exclusive of public vessels of the United States and other ships exempt from the payment of tolls) increased from 5,197 to 5,475; and gross revenue from tolls rose from \$22,931,055.98 to \$24,228,830.11, an increase of \$1,297,774.13. The net revenue from Canal transit operations during the fiscal year 1927 was \$15,611,093.80 and from Canal business operations \$876,536.80, as compared with \$15,151,668.06 and \$841,310.29 during the fiscal year 1926.

ACCOMPLISHMENTS OF ARMY PERSONNEL

OTHER ARMY AGENCIES

The Civilian Personnel Division, under direction of Assistant and Chief Clerk, J. C. Scofield, exercised administrative control in matters pertaining to civilian employees of the War Department and with the Army. This task involved the administration of the Civil Service Law and Rules, the Reclassification Act, the Retirement Act, the Eight Hour Law, and the Employees' Compensation Act. This division also handled matters affecting the regrading of salaries and wages. The number of civilian employees affected by the foregoing laws in the Department and its field services at this time is 47,747. During the World War this force reached a strength of 251,634.

The Historical Section, Army War College is launched upon a project of delivering to the country the first full and authentic account of America's participation in the World War. The narrative is being put in the form of monographs which are fully annotated with reference to sources which substantiate the facts related. The completed work will be without favor, bias, prejudice, opinions or special pleading. It should give to the United States a solid framework upon which to elaborate any desired phase of America's efforts in the gigantic conflict.

The Corps of Engineers, besides its purely commercial and civil activities, produced much effective service for the country in a military way. After annual urgings by the Chief of Engineers the Temple Project was approved by the 68th Congress in its second session. It authorizes the completion of a general topographic map of the United States within twenty years and permits the President to use any agencies then existing or later created for the work on which cooperation by state or other civic organizations may be employed. While the greater part of this project is intended to be carried out by the U. S. Geological Survey and the U. S. Coast and Geodetic Survey, agreement has been reached whereby the Corps of Engineers may participate to the full extent that its military personnel can be made available.

For the reproduction of lithographic, photographic relief modeling, drafting and photo engraving, there has been equipped and established at Washington Barracks the Engineer Reproduction Plant. Its extensive operations have been accomplished on the basis of reimbursement of work for other Government Bureaus and Departments. Such work has been done at lower prices than those obtained from commercial concerns, thereby effecting a considerable saving to the Government.

Progress in aerial surveying development has been made in the experimental work for rapid ground control by making use of aerial photographs. Tests in night triangulation were continued with vertical searchlights as targets. An officer of Engineers was kept at McCook Field, Dayton, Ohio, in connection with the development of aerial photographic apparatus. Largely as a result of his efforts a five-lens camera has been built. The value in peace of military photographic development was abundantly proved during the Mississippi floods, when aerial multi-lens photographs proved to be the only methods of photographing the flood at its crest.

Activities under seacoast fortifications have been limited during the past year mainly to the study and preparation of plans for fortification projects, a continuation of the major armament installation in the Panama Canal, the further development and test of anti-aircraft searchlight materiel, and the maintenance of the harbor defenses of the Continental United States, Insular Possessions and Panama Canal Zone.

It has been realized that anti-aircraft defense is one of the most important phases of our national defense. The improvements in airplanes since the war, resulting in higher ceilings, greater efficiency in anti-aircraft artillery and searchlights. Efforts in development since the war have been directed toward providing a drum type of searchlight which would be sufficiently light in weight to meet the needs of mobility and, at the same time, have a beam efficiency equal to or greater than

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the harbor defense searchlight. This accomplishment was realized in the 1925 model, 150 ampere, duralumin, drum-type searchlight.

Of the 51 items of the war reserve for the Corps of Engineers, 31 are below the quantities authorized to the amount of \$3,294,765.00. No money

is available to build up a war reserve of these items. The most important item from the point of view of difficulty of procurement and essentiality is the searchlight. This is a non-commercial item produced by only a few firms and it requires considerable time for production.

WATERWAYS AND HARBORS

BY EDGAR JADWIN

MAJOR-GENERAL, CHIEF OF ENGINEERS, UNITED STATES ARMY

INLAND WATERWAYS

Location and Description.—The principal systems are the Great Lakes, together with the New York State Barge Canal and the Hudson River; the Mississippi system, including the Missouri, the Ohio, and their important tributaries; the rivers of the Atlantic Coast and the intracoastal waterways connecting them; the rivers of the Gulf Coast, and the intracoastal waterway system running from Mobile via New Orleans down the Texas coast, and connecting with the numerous southern Louisiana waterways and with the Mississippi system; the San Joaquin—Sacramento system in California; the Columbia system in the northwest; and the minor Pacific coast rivers. These are improved over stretches and to depths commensurate with their commercial importance and with the benefits which are derived from them.

The Great Lakes, which are really inland seas, have connecting channels from Superior to Erie at least 21 feet deep at standard low water, and corresponding depths are provided at the most important harbors. The New York State Barge Canal, and the intracoastal system from Trenton, N. J., to Wilmington, N. C., have 12 feet. The Mississippi has 9 feet to Cairo, and project depths of 9 feet to St. Louis, and 6 feet to St. Paul; the Ohio, a 9-foot project, with 6 to 9 feet on its main tributaries; the Missouri, a 6-foot project to Sioux City, and the Sacramento a 10-foot project. Various other rivers and waterways range from 7 feet or more to 3 or

4 feet, and those of small importance often have no specified project depth, and are improved simply by the removal of snags and obstructions.

The above figures give the *project* depths toward which the War Department is working. They have not yet been attained in all cases, due to limitation in time and funds. Among the important sections not yet to project depth are the Mississippi from Cairo to St. Louis, and from St. Louis to St. Paul; the lower Missouri; and the lower Ohio. Work on these is being pushed as rapidly as possible.

Commercial and Economic Importance.—The corrected total of inland waterway commerce for 1926 was 217,000,000 tons valued at \$3,680,000,000. Rough estimates indicate that the direct benefits to the public, in the single item of reduced transportation charges on freight actually moving by water, and disregarding all ulterior benefits, are sufficient to pay about every two years for the entire sum spent since the beginning of our history in providing the improvements.

Status of Water Transportation.—Inland waterway transportation, after a widespread decline coincident with the extensive development of railroad facilities throughout the country, has in the past ten or fifteen years shown a pronounced increase. Particularly is this true during the last five years, which have witnessed an increase of about 75 per cent in the business handled on inland waterways and an equal increase in the domestic trade of our ocean ports.

The pronounced trend toward a more extensive use of waterways is due to a number of causes. Among these is the realization that under suitable conditions as to character of traffic, origin and destination with respect to waterways, suitable channels, and modern carriers and terminals, water transportation is inherently cheaper than any other form.

The heavy horizontal increases in railroad rates have imposed a burden upon the lower classes of traffic, which has made imperative the demand for more economical transportation. Waterways are particularly valuable in the handling of raw products and low grade commodities for which the economic necessities of the country demand lower transportation costs than railroads can afford. There is a growing realization that the three means of internal traffic, viz., railroads, waterways and highways, are properly cooperative rather than competitive, and that the development of each of them is not only of benefit to the public at large but also to all transportation agencies concerned, thus requiring cooperation of the railroads in the establishment of equitable joint rates. There is also a distinct tendency toward providing modern and efficient carriers, terminals and transshipment facilities.

Mississippi System.—In no section of the country is this more evident than in the Mississippi Valley. The Mississippi up to Cairo is now served by the Inland Waterways Corporation, which is touched on below. During the year there has been further agitation for the establishment of adequate carriers on the upper Mississippi. On the upper sections of the Ohio system there has long been intensive traffic, such as the coal movements on the Monongahela, Allegheny and Kanawha and the Ohio itself. With the approaching completion of the river improvement, whereby it will be tied to the Mississippi with a year-round 9-foot channel, the great steel companies of the upper valley are spending large sums for new floating plant, and are increasing their shipments by way of the river. There is also a growing

demand for the establishment of additional efficient common carrier service on the Mississippi and its tributaries, as well as on numerous other important waterways throughout the country.

The importance of our national waterways system, the need of completing it and of intensively developing its traffic, and the proper co-operative relation between railways and waterways, is appreciated by far-seeing public men.

Inland Waterways Corporation.—This was created June 3, 1924, by act of Congress. It represents a re-organization of the Federal Barge Line created during the war, and in its present form is a corporation functioning like any other, but controlled by the Government through the Secretary of War. The present chairman and executive officer is Major General T. Q. Ashburn. It has for some time been operating a fleet of modern barges and towboats on the Mississippi River from New Orleans to St. Louis, on the Warrior River in Alabama, and over the intermediate sheltered intracoastal waterways. During the year the service on the Mississippi was extended to St. Paul. It handles freight of all kinds—low, medium, and high grade. Operation of the barge line since the close of the war has not, until recently, resulted in a material direct return on the investment. The reasons are many, but essential equipment was lacking and joint rates with connecting railroads were not existent. Conditions are constantly improving, particularly in the rate situation. During the calendar year 1926, the corporation handled 1,341,578 tons of commerce, of which 1,044,649 tons pertained to the Mississippi Division and 296,929 tons to the Warrior Division. The net results to the people of the United States up to the present are the salvaging of a potential war loss of some \$7,000,000 and an annual saving in freight rates of more than a million dollars.

New Waterway Projects.—By the act of January 21, 1927, Congress adopted 24 projects for inland waterway improvement, besides 9 for Great Lakes Harbors. These include both

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new projects and the extension of existing ones. Among the important projects adopted are those for a 9-foot channel in the Mississippi River from Cairo to St. Louis; for a 6-foot channel in the Missouri River from Kansas City to Sioux City; for a 9-foot channel in the Illinois River from its mouth to Utica; and for the extension from Beaufort to Wilmington, N. C., of the 12-foot Atlantic intracoastal waterway, of which Beaufort had previously been the southern terminus.

During the fiscal year 1927, the Corps of Engineers completed and submitted to Congress 53 reports on proposed new projects for inland waterways. Of these, 22 reports were favorable for improvement, and 31 were unfavorable.

The report of Major General Edgar Jadwin, Chief of Engineers, containing the plan of the Army Engineers for flood control of the Mississippi in its alluvial valley was submitted to Congress in December.

The following major proposals for new or extended inland waterways developments are now up for study, recommendations thereon not having been formulated:

Enlarging the ship channels on the Great Lakes to accommodate present and prospective commerce. Under investigation by a board of four officers of the Corps of Engineers, who are required by law to give consideration to compensation or regulatory works as well as dredging and rock removal.

Deepening the channel of the Mississippi River from the mouth of the Missouri River to Minneapolis to 9 feet.

Deepening the channel of the Missouri River from Kansas City to its mouth to 9 feet.

A barge canal between the Ohio River and Lake Erie.

A 40-foot channel in the Hudson River from the Battery to Twentieth Street, New York City.

A 40-foot channel in the Delaware River from Philadelphia to the sea.

A barge or ship canal across New Jersey from the Delaware River to New York Harbor.

Extension of the Atlantic intra-

coastal waterway from Cape Fear River, N. C., to St. Johns River, Fla.

Extension of the Gulf intracoastal waterway from Corpus Christi to Point Isabel, Texas.

Deepening the Houston Ship Channel, Texas, to 32 feet.

Several hundred other studies of varying importance.

At its last session, Congress authorized the expenditure of a little over \$7,000,000 for the survey of a large number of rivers to determine the best use of their water resources. Flood control, power, irrigation, drainage, navigation, and water supply must all be considered. Work on these surveys will be expedited when funds are made available in the next appropriation bill.

PORTS

Significance.—A port channel is distinguished from an inland waterway in being used primarily by vessels operating on the open sea. Many channels are used for both purposes, and it is not always possible to draw an exact line between the two classes. The agencies and procedure for improvement of port channels are the same as those described above in respect of Inland Waterways.

The principal ports of commercial importance at the present moment are given below, arranged geographically:

New York, the major port of the nation, handling nearly 25 per cent of our foreign commerce, and especially notable as the principal port for the foreign and coastwise movement of high grade package freight.

Other major northeastern ports: Portland, Me., Boston, Philadelphia and Baltimore, and Norfolk and Newport News.

Secondary northeastern ports, notably Providence and the other southern New England ports, whose principal commerce is inbound coal, lumber and petroleum products, and coastwise miscellaneous traffic with New York.

The major South Atlantic ports are Wilmington, N. C., Charleston, S. C., Savannah and Jacksonville, with a growing general commerce in some cases, but specializing on bulk

commodities. To these should perhaps be added Miami, a coastwise port whose channel is not fully deepened, but which has made tremendous progress with the growth of the State of Florida.

The major Gulf ports are New Orleans, with a very large general commerce; Houston, Galveston and Texas City, with a large commerce in grain, petroleum products, cotton and other commodities; the Sabine ports, primarily oil shippers; and Mobile.

The other South Atlantic and Gulf ports include Fernandina, Tampa and South Boca Grande, fertilizer shippers; Freeport, Texas, a sulphur shipper; Key West, primarily a carferry port; the new port of Corpus Christi; Brunswick, Pensacola, Pascagoula, Gulfport, and others.

The major Pacific ports are Los Angeles, San Francisco, Portland, Oregon, Seattle and Tacoma. Los Angeles has developed a tremendous commerce, most of its tonnage is local outbound oil and inbound lumber, but general cargo is increasing. The others are ports of general commerce.

The secondary ports of the Pacific include San Diego, several California oil ports, and the lumber ports of the northwest.

Deep Ports.—Of the major ports a few have channels with improved depths as great as 40 feet. These are for special traffic, such as the largest Atlantic and Pacific liners and the largest oil tankers. In general, the standard depth which is being provided and maintained for ports of general commerce is 30 feet at mean low water. This is ample in nearly all cases. Statistics show that of the commercial vessels passing through the Panama Canal in 1925 about 95 per cent drew less than 30 feet, and the same general rule applies for the shipping of the world. Smaller ports handling a coastwise business primarily are being maintained at depths of from 18 to 25 feet, and the numerous fishing ports, or ports on sheltered waters, such as Chesapeake Bay, often have channels of 12 feet or less.

New Port Projects.—Including new projects and extensions of existing projects, there were adopted by the

river and harbor act of January 21, 1927, 18 new projects for improvement at ports. Among these is the authorization of a 40-foot channel to Newport News, Va., a 26-foot channel to Stockton, Cal., and provision for the purchase of the Cape Cod Canal, which will provide a safer passage-way, free of tolls, in a locality very dangerous for vessels. During the fiscal year 1927, 31 reports on proposed port projects were submitted by the War Department to Congress. Of these 18 were favorable for improvement and 13 were unfavorable.

Port Facilities.—The period following the World War has been one of great activity in port organization and port development. The Army supply bases built at Boston, Newark, Brooklyn, Philadelphia, Norfolk, Charleston and New Orleans have been leased for commercial shipping, except for reservation of sufficient space for military needs. The dry docking and repair facilities provided for the Emergency (now Merchant) Fleet have also proved of great value to merchant vessels, particularly on the Atlantic and Gulf coasts, where some ports were previously without such facilities.

Active construction of piers and wharves has been in progress in most of the established ports; other ports have organized, and are contemplating improvements; and some localities not now ocean ports are establishing facilities for such business.

Port of New York Authority, formed jointly by the states of New York and New Jersey, has been carrying on extensive investigation with a view to coordination of the rail and water facilities of the Port of New York, and has already accomplished the unification of one of the proposed belt lines in New Jersey. Construction is under way on two bridges across Arthur Kill, and another has been commenced across the Hudson at 178th Street. Plans are being prepared for a fourth bridge which is to cross Kill van Kull. The City of New York has added twelve piers, built at Staten Island, and has improved many others. Port Newark has increased the facilities of New York Harbor by the development of

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ocean terminals, and further extension will be provided when a project at Jamaica Bay, now in an incipient state, has been completed.

Philadelphia and Others.—Commercial piers have been added to the well equipped waterfront of Philadelphia. The facilities at Norfolk have been increased by the construction of coal loading piers of great capacity and high efficiency, of other wharves, and of a large grain elevator. Wilmington, Del., has completed a modern terminal capable of docking several ships at one time. Notable waterfront activity is shown at Mobile, Ala., where an extensive program of terminal construction is under way. Miami, Fla., has also found necessary a considerable expansion of its facilities. Houston, Texas, once an inland city, has in recent years developed on an artificial ship channel an extensive port, handling a large tonnage of oil, cotton and miscellaneous freight. On the Pacific Coast there has been a considerable expansion

of facilities, notably at Los Angeles, where the commerce has increased enormously in recent years. San Francisco, Portland, Oregon, and Seattle have also found it necessary to provide large additional accommodations for their water-borne traffic.

Somewhat less extensive, but nevertheless important, additions to waterfront facilities have been provided at Portland, Me., where a state pier has been built, at Boston, Baltimore, Charleston, S. C., Jacksonville and Tampa, Fla., San Diego and Richmond, Calif., and Tacoma, Wash., and a new port has been formally opened at Corpus Christi, Texas. Plans have been, or are being made, or work is in progress, for new developments at Savannah, Ga., Oakland, Calif., and Lake Charles, La.

Mediums for the interchange of ideas covering port development are furnished through the American Association of Port Authorities, and the Pacific Coast Association of Port Authorities.

Waterways	Short Tons	Value
Hudson River, middle stretch.....	8,150,131	\$ 66,410,696
Hudson River, upper stretch.....	1,345,655	95,818,606
Delaware River, above Philadelphia.....	5,447,278	16,096,389
Chesapeake-Delaware Canal	609,706	37,088,808
Waterways, Norfolk to Sounds of North Carolina.....	217,817 }	4,847,950 }
	677,688 }	21,027,921 }
St. Johns River, above Jacksonville.....	287,434	17,522,003
All others, Atlantic Coast.....	10,951,843	344,696,160
Tombigbee-Warrior System	1,292,098	22,863,319
Southern Louisiana Waterways (excluding Mississippi River)	2,296,849	48,108,613
All others, Gulf Coast.....	1,670,697	25,488,302
San Joaquin River.....	934,809	56,455,662
Sacramento River	1,222,993	85,315,284
Columbia River and lower Willamette below Vancouver and Portland ¹	4,669,998	60,339,965
All others, Pacific Coast.....	9,803,314	111,616,788
Mississippi River, below Vicksburg (excluding ocean commerce)	4,428,379	169,218,882
Mississippi River, Memphis-Vicksburg.....	4,792,780	179,439,744
Mississippi River, Cairo-Memphis.....	1,660,188	95,261,086
Mississippi River, St. Louis-Cairo.....	1,005,979	49,025,466
Mississippi River, above St. Louis.....	691,637	5,530,899
Ohio River	19,754,978	150,086,223
Monongahela River	26,374,682	117,805,525
Allegheny River	3,761,739	7,857,421
Kanawha River	1,360,109	6,859,760
All others, Mississippi System.....	13,206,009	195,968,716
Detroit River (through commerce of the Great Lakes)	95,003,604	1,179,944,762
All others in United States.....	22,012,533	982,961,908
Total.....	243,630,927	\$4,054,686,858
Total, corrected for duplications because of commerce moving over two or more waterways.....	217,000,000	\$3,680,000,000

¹ Exclusive of ocean traffic.

WATERWAYS AND HARBORS

INLAND WATERWAY AND COASTWISE COMMERCE

Government Improvements.—The preceding table shows freight traffic for 1926 of waterways under improvement by the Federal Government, excluding short deep stretches of rivers (like the lower Hudson and Delaware) which are really approaches to ports.

The figure for the Detroit River

does not give the entire Great Lakes commerce, much of which (classified as foreign, coastwise or internal) did not pass through that channel. The total corrected Lakes commerce was 137,394,434, valued at \$2,109,392,255.

Other Improvements.—The following is for internal waterways other than those under improvement by the Federal Government:

Waterways	Short Tons	Value
Cape Cod Canal ¹	840,063	\$304,416,910
New York State Barge Canal.....	2,369,367	97,200,000
Lehigh and Delaware Division Canals, Pa.....	314,419	1,829,296
Chicago Sanitary Drainage Canal.....	805,724	1,777,738
New Basin Canal, La.....	414,794	4,155,186
All others of record.....	1,095,083	49,708,360
Total.....	5,839,450	\$459,087,490

¹ It is questionable whether this should be classified as an inland waterway. When funds are provided, this waterway will be purchased by the United States in accordance with Congressional sanction given in the River and Harbor Act of January 21, 1927.

The grand total of corrected inland waterway commerce in recent years is as follows: (including only that part of the Lakes commerce passing through the Detroit River).

Year	Tonnage	Value
1920.....	125,400,000	\$2,814,600,000
1921.....	116,300,000	2,443,500,000
1922.....	111,800,000	3,177,900,000
1923.....	153,700,000	2,960,200,000
1924.....	173,200,000	3,446,000,000
1925.....	227,704,122	4,237,550,163
1926.....	243,630,927	4,054,686,858

Coastwise.—The following shows coastwise commerce, which includes intercoastal.

Panama Canal.—The intercoastal commerce through the Panama Canal is included in the above. The following gives the total traffic of the Canal in recent years:

COMMERCE THROUGH PANAMA CANAL. SHORT TONS. FISCAL YEARS

	Intercoastal	Total
1921.....	1,372,388	11,599,204
1922.....	2,562,527	10,884,910
1923.....	8,068,558	19,567,875
1924.....	13,527,378	26,994,710
1925.....	9,496,259	23,958,836
1926.....	9,871,210	27,747,541
1927.....	11,365,592	31,078,000

Port	Tonnage, Both Ways	Value
Portland, Me.	2,164,212	\$ 82,816,311
Boston	11,788,123	634,787,828
Providence	4,427,403	427,863,072
New York	33,869,374	2,370,666,514
Philadelphia	10,704,163	706,332,096
Baltimore	4,221,344	282,099,891
Norfolk-Newport News	15,708,747	538,874,147
All others, Atlantic Coast.....	25,779,868	1,715,656,875
New Orleans	2,225,068	174,926,945
Galveston, Houston, Texas City.....	6,245,472	603,384,814
The Sabine ports.....	12,635,126	262,087,038
All others, Gulf Coast.....	14,840,951	284,162,222
Los Angeles	17,654,549	751,056,052
San Francisco Bay and Harbor.....	23,010,959	1,034,295,061
Portland, Oregon	3,047,539	196,987,517
Tacoma	3,846,256	87,154,927
Seattle	7,382,768	414,574,976
All others, Pacific Coast.....	12,760,671	254,842,335
Hawaii, Porto Rico, and Alaska.....	3,732,732	335,133,195
Total.....	216,045,325	\$11,157,701,816
Total, corrected for duplications of "receipts" and "shipments"	108,022,662	\$ 5,578,850,908

ORGANIZATION OF THE NAVY

BY WILLIAM LEDYARD RODGERS

REAR ADMIRAL, UNITED STATES NAVY

ADMINISTRATION

Functions.—Although the Navy does its work on the sea, it draws its men, ships and supplies from the land and is directed by the President, who is the Constitutional Commander-in-Chief. Consequently the foundation of its efficiency lies in a sound organization and management of the shore establishment of the Navy. We shall examine this before discussing the organization afloat. By authority of the Constitution supplemented by legislative action, the President delegates his authority to the Secretary of the Navy, who maintains and operates the navy as the deputy of the President, according to law and with the money appropriated by Congress. When the Secretary is absent from his post the law authorizes an Assistant Secretary to sit at the Secretary's desk and operate the Navy as the temporary holder of the delegated authority of the President.

Like every other business institution, the naval organization must provide for two main tasks. It must maintain itself in efficiency and it must direct its effort wisely towards the objective for which it exists. In military phrase, the management of maintenance belongs to the Routine Staff; the direction of effort belongs to the General Staff, or as the Navy calls it, to the "Office of Operations."

Bureau of Navigation.—The maintenance of the Navy falls under two heads: (A) Personnel; (B) Material. The Bureau of Navigation deals with all matters affecting the enlistment, discharge, training, administration and discipline of the personnel of the Navy as well as the operation of the Naval Home for retired seamen, the Naval Academy, the Hydrographic Office and Naval Observatory. The Bureau is responsible for training individuals only, but not for ship efficiency. Besides the training stations where recruits get their elementary naval training, the Bureau maintains various technical schools for electri-

cians, machinists, cooks, torpedo and radio men, etc. In regard to officers, the Bureau manages the Naval Academy for midshipmen, which is recruited by appointees of the President and of Congress. The Bureau keeps the records of both officers and men. It fixes the proper complements to man each type of ship, and assigns individuals to specific duty here or there, and transports them from place to place when travel is necessary.

Bureau of Medicine and Surgery.—The duties of the Bureau of Medicine and Surgery are suggested by its name. It directs the hospitals and the medical work on board ship through the surgeons, dental surgeons, hospital corps and female nurse-corps of the Navy. (The last-named do not serve on board ship.) Besides the care of the sick and injured, the Bureau supervises hygiene, both ashore and afloat. It examines physically all recruits before enlistment and keeps medical records of all in the service for reference in case of disability and for the use of the Pension Office.

Materials Bureau.—Next come the four material Bureaus—Construction, Engineering, Ordnance and Aeronautics. The first designs and builds the ships of the Navy, and the second is in charge of engineering, including the design and manufacture of steam, electrical and gas engines and of radio installations. Both of these Bureaus have experimental research stations to promote their efficiency. The Bureau of Ordnance designs and manufactures weapons and ammunition, such as guns, armor plate, torpedoes, bombs, mines, gunpowder, fuses and the like. The Bureau of Aeronautics is the most recently created and is in charge of the design and manufacture of all types of flying vehicles and their equipment. An Assistant Secretary of the Navy for Aeronautics has been recently authorized by Congress to supervise this branch.

The Bureau of Supplies and Accounts handles all the finances of the

Navy, pays the personnel for service rendered and makes all contracts. Besides, it feeds and clothes the personnel and maintains the stocks of material for itself and other Bureaus which must be kept on hand ready for routine use or for the emergency of war.

Bureau of Yards and Docks.—All the above-named Bureaus need land and buildings to carry on their activities. The Bureau of Yards and Docks has charge of real estate. It designs, builds and maintains roads, shops, offices, hospitals, drydocks and other buildings on naval property. As all its services are rendered for the facilitation of the work of other branches of the Navy, it consults each of them in matters that concern it, and lays out its plan accordingly. All of these Bureaus have funds annually placed at their disposal by Congress, which they disburse through the Bureau of Supplies and Accounts.

Judge Advocate General.—The legal affairs of the Department are managed in the Office of the Judge-Advocate-General. This Office is in two sections. The Solicitor is the head of the Civil division which is concerned with matters of law such as arise in the conduct of business of every great corporation. The military branch supervises the legal part of the discipline of the Navy. All records of courts-martial go before it for review, previous to action by the Secretary or even the President, if such is necessary. It supervises the naval prisons.

Secretary's Council.—These various branches of the Department are co-ordinated by the Secretary's Council, at which the Chiefs of Bureaus and other officers periodically assemble to discuss and arrange for current work. There is, moreover, the General Board, composed of officers who have held high commands and other ex-officio members, which is charged with the shipbuilding policy of the Navy, and is called upon by the Secretary for recommendations as to important matters of Departmental policy.

MAINTENANCE AND OPERATION

Naval Stations.—The physical work of maintenance of the Navy is

carried on at naval stations numbering over two hundred, great and small, including technical schools, hospitals, barracks, shipyards, gun and ammunition factories, magazines and depots for stores of all kinds, radio stations, research laboratories, etc. These establishments are mostly operated by civilian personnel, under civil service rules and are directed from the Navy Department by the Navy Yard Division under the Assistant Secretary of the Navy. The naval stations are industrially organized under a Commandant, who carries on the work of construction, repair and supply of ships according to directions from the responsible Bureaus in Washington, who allot him the necessary sum for each task.

The Office of Operations accepts ships, men and supplies from the maintenance side of the Department and works them up into efficient ships and fleets and uses them in peace and war to carry out the policies of the nation. The head of the office is the ranking officer of the Navy ex-officio. The office is organized in several divisions. The Training Division is in charge of all drills, target-practice, steaming exercises, and athletics. By a system of competition and observation it maintains efficiency in the fleet. The Office of Intelligence collects all information at home and abroad useful to the Navy. It is aided by Naval attachés at the American legations abroad, who report to the Department what is happening there as to naval affairs, and as to the status of the navy of each power.

The Planning Sections draws up plans for war under various conditions. Such plans usually go no further than the mobilization of the active and reserve strength, a concentration of force in some suitable locality, arrangements for supply and maintenance of the fleet and a decision as to the objective towards which the combatant effort will be directed. The Division of Materiel coordinates with the building Bureaus as to work of maintenance and repair on ships in active service. The Division of Ship Movements manages the ships and fleets in commission. The Communications Office is in charge of all radio

IX. DEFENSE AND ARMAMENTS

and telegraphic work. There is an Inspection Division and a Districts Division, handling naval matters in different parts of the country.

Budget.—The appropriations for the Navy are controlled by the Bureau of the Budget, which has its representative in the Navy Department. Under the President, the Budget Officer allots to each Department the sum which the President thinks proper.

THE FLEET

Types of Ships.—A few ships take their orders directly from the Office of Operations, but the great majority are members of squadrons or fleets. The largest command, known as the United States Fleet, is composed of all types of ships, both combatant and auxiliary, including battleships, cruisers, torpedo boats and submarines, besides ships for supply repairs and hospitals. These ships, all under one Commander-in-Chief, are grouped in appropriate subdivisions under flag-officers who are responsible for drills, manœuvres, efficiency and discipline of their respective commands. Thus the fleet is maintained in readiness for service; and even in peace some detachment may act in conjunction with the State Department in support of the foreign policy of the administration.

Functions.—Each ship is under the command of a captain who exercises authority over all on board, subject himself to the Navy Regulations approved by the President as Commander-in-Chief. The organization for battle is also that for carrying on the daily routine of maintenance. The ship's company is distributed in "divisions." The Navigator's Division handles the ship as a whole under orders of the captain. The helmsmen, leadsmen and lookouts compose it. The Engineer's Division is in charge of the steam and electrical machinery. Several Gun and Torpedo Divisions handle the weapons of the ship, and there is an Aviation Division for airplanes and a Small-Arms Division. Fire-Control Division observes the enemy and directs the gun-fire. A Repair Division of mechanics remedies damages in battle. The Surgical Di-

vision cares for the injured. A Signal Division communicates with other ships and the rest of the world by radio, visual and sound signals.

The general work of repair and maintenance of the ship is carried on by the different divisions, each of which is responsible for the cleanliness and good order of that part of the ship in the neighborhood of its own battle station. The divisional work of maintenance is supplemented as may be necessary by the mechanics of the ship's company. The duties of the Commissary Division are indicated by its name. The Paymaster of the ship is the Commissary and also the General Storekeeper and Finance Officer.

MARINE CORPS

Duties.—There is within the Navy an important body as yet unnamed, the Marine Corps. This is a body of soldiers forming a part of the Navy. The marines do sea duty on board the larger ships. They man part of the ship's battery and form the Small-Arms Division and compose a part or all of any landing force that may be sent away from the ship. When serving in any ship they form an integral part of the ship's force, in no way in excess of the battle complement. The marines not at sea are organized as an expeditionary force for quick mobilization to seize an advanced base for the Navy in case of war. For this purpose the Expeditionary Force is organized like the Army. Besides, the marines on shore are quartered in military posts at the various naval stations where they do duty as guards.

Organization.—The headquarters organization of the Marine Corps is under a Major General Commandant, and is much like that of the Army (which see), except that it is not so entirely self-dependent in maintenance as is the Army. The marines draw their ammunition, small-arms, artillery, airplanes and medical service, as well as some other services from the naval bureaus.

AIR SERVICE

Cooperation.—It has been proposed to separate the aviation service from

the Army and Navy and make it into an independent branch of the country's armament and then to combine the three arms of army, navy and aviation in one huge organization of "The National Defence." This project has not commended itself to the responsible authorities of the Government. The air service must always operate in close conjunction with either the Army or Navy. Both need it as an important auxiliary to their own work. Moreover, should it be made an independent arm, it would immediately be obliged to organize round it a military ground force or a fleet to enable it to operate against the enemy. Such has been the case in regard to the British Air Force in Mesopotamia, where a considerable army has been made subordinate to the Commanding Air Marshal in order to permit the Air Force to maintain itself near the hostile area.

Development.—The separate Air Force in Great Britain was started during the war chiefly as a device for increasing the output of airplanes. Its development in England since the war does not seem to have been as satisfactory as might be, so that there seems to be good reason to believe that the present status of the Air Force in the organization of the Army and Navy of the United States is better than an independent status. It must be remembered that the attention which the air forces on both sides aroused during the war was in great part because they were new, and therefore counter measures were slow to develop. At present, in spite of all the improvements in aircraft technique, weapons in the air are probably less to be feared than in 1918, although the Air Service will be a most important auxiliary in the next war.

ARMY AND NAVY COORDINATION

Joint Board of Officers.—The ad-

ministration does not believe that military efficiency will be increased by uniting the Army and Navy in one military structure on account of the added complexity of management, which is already sufficiently great as it is. Nevertheless, both the Army and Navy have long been aware that modern war demands a greater measure of coordination than was customary in the past, and steps have been taken to provide for it without merging the two. In 1903 the Secretaries of War and of the Navy established a Joint Board of Officers of the two services to coordinate the action of Army and Navy where it seemed desirable. The matters cognizant by this Board and its procedure were revised in 1919. It is without legislative authority, but operates by the agreement of the Secretaries, approved in some points by the President. The Board has prepared regulations for the joint action of Army and Navy and of their air components when cooperating in war. The joint operation is further provided for by local joint committees representing Army Corps Areas and corresponding Naval Districts to take cognizance of local subjects, and report to their respective chiefs as to proper action to be taken.

Joint Aeronautical Board.—There is also a Joint Aeronautical Board to investigate and report to the Secretaries of War and the Navy upon questions jointly affecting the development and employment of aviation of both services. There is also an Army and Navy Munitions Board which coordinates the plans for acquiring munitions and supplies needed for war purposes, so that the supply agencies of the two services will not conflict. The organization for joint action of Army and Navy under the supreme command of the President is thus provided for without resort to further centralization.

THE FUNCTIONS OF THE NAVY

BY WILLIAM LEDYARD RODGERS

REAR ADMIRAL, UNITED STATES NAVY

Defense.—The people of the country look upon the Navy as a defensive arm, and so indeed it is but its defensive rôle is a much more extended one than the mere protection of the coasts from hostile gunfire, as so many erroneously believe. The function of the Navy is to maintain and defend the policies of the United States. The underlying and fundamental policy of this democratic republic is to continue and promote the prosperity of the whole people of the country. Above all, we desire peace as the basis of prosperity. In the present state of civilization, an unarmed nation can not be safe, but a certain measure of security may be reached by armaments: for that we need a navy.

Armament or Law?—It is wrong for us of this country to think that some substitute may provide a better reliance than armaments. We are prone to think of law as such a substitute because we are one of the richest nations and we would like to have that wealth protected by the conservatism of law. But nations less well-to-do are jealous of our favored position in the world and the word of law would be a poor guardian of our prosperity. It is necessary to have force at hand to compel obedience to any law, and there is no international force to back international law. Nations can rely with confidence only upon their own armaments.

The Open Door.—More particularly, we need a Navy to protect the American policy of the "open door" in foreign trade. The development within the last century of steam transportation by sea and land has made the world more of an economic unit than it ever was before without in any way dispelling international jealousies and rivalry. There are four great manufacturing nations in the world which draw the raw products of industry from every part of the world and export the products of

their factories in payment. They are England, Germany, France and the United States. The prosperity of each requires free access to the markets of the world. The United States exports about 10% of all its products of the field and the factory.

The United States has Canada as one land frontier and Mexico as another, but the rest of the world it can reach only overseas. Once, when we were developing the west with our railways, we relied on England to lend us money for them and to carry our exports on over the ocean. But we can do so no longer. We are no longer England's client, but her economic rival everywhere. It is vain to hope that she or Germany will continue to carry our ocean commerce for us without discrimination against us. To retain the full measure of our prosperity it is clear that we must reach foreign markets throughout the world by our own merchant shipping.

Protection for Commerce.—In peace and war that merchant fleet must be protected by a strong navy. We must not forget that America's century-old stand for the freedom of commerce during war has failed to commend itself to the world during all that time, and even we ourselves have not supported our own doctrine when the country herself has been at war. There are always two ways of subduing an enemy—by bloodshed and by starvation, i.e. depriving him of necessities. Thus war against commerce is a very potent method of applying force. In the Great War, the English blockade of Germany brought the population to a frame of mind in which it no longer was willing to fight and did not continue to encourage the German armies in the field. We can not expect a belligerent to renounce this form of attack by asserting neutral right, for although neutral trade in itself is innocent, yet so far as it is an aid to a belligerent it is hostile. And an

international law of war is insufficient to protect it; for the conduct of war against property is not governed by true law, but merely by empiric rules of conduct which treat the enemy commerce with as much severity as may be without driving important neutrals into war. The belligerents thus have considerable latitude, for no nation will go to war unless strongly pressed, and neutrals will think it is better to suffer much before resorting to the last remedy of war. The United States hopes to be neutral in the next great war and desires to have its peaceful trade respected by the warring powers. The best way to secure this end is to have a strong Navy. This is the function of the Navy.

Lesson of the Late War.—In the last war we saw how the United States, while still a neutral, had her commerce interfered with by both sides. As we had no merchant shipping and the foreign fleets that had been carrying our goods went off to the war, so our factories could not get their raw materials, and neither our farmers nor the factories could ship abroad, as was shown by the congestion at the docks. Later, both sides interfered with our shipments, and Germany, thinking we would not fight, pressed us beyond endurance until we declared war. Had she not relied on our unpreparedness and thought us unwilling to fight, she would have annoyed us less and it is quite possible that we might have remained neutral during the whole war.

Protection of Neutrality.—One function of the Navy is thus seen to be to protect American commerce and with it American prosperity from undue interference during the war of other nations while the United States is neutral. It will accomplish this by being as strong as the Treaty of Washington authorizes; that is, as strong as the British navy or second to none. It is not to be expected, however, that the Navy will be able to preserve completely American prosperity when other nations go to war for even neutral nations suffer from hostilities although indirectly. Yet, if our Navy enables us somewhat better to preserve our neutrality and the

freedom of our commerce on the seas, it will serve the country well.

Combatant Service.—The other function of the Navy is its combatant service when this country is at war. In war, the productive power of the country is diverted in a great measure to war supplies of every kind and the needs of the people as well as the requirements of war demand an unusual supply from overseas. For this we need both commercial shipping and a navy to protect its transit in every part of the world. The legal doctrine of continuous voyage was first developed as an international law of war by this country during the civil war of 1861-5 and was extended by Great Britain in the recent war. Under this rule goods intended for enemy consumption may be seized as lawful prize wherever apprehended. Germany went even further than England and destroyed enemy goods instead of seizing them. In the future we may expect our enemy to strike at our sea-borne commerce wherever found and we shall do likewise to him. The duty, the function, of the Navy in war is therefore to deny the enemy the use of the sea for either military or civil traffic, and to keep the seas open for our own use.

America's Needs.—The discussions at Geneva last summer (1927) as to a treaty further limiting naval armaments brought out that American needs were scarcely less than England's. As our commerce reaches to all parts of the world, so should our Navy be able to protect it everywhere. Our coastal trade is greater than the foreign trade of any country. Therefore we need a cruiser force, patrolling the seas and suppressing hostile raiders, and a battleship fleet providing a powerful organized striking force of all types of ships which will be able by its fighting strength to overcome the enemy's best efforts with a similar force. The duty of the battle fleet is thus to afford a free field to the cruisers in their operations against the commerce supporting the enemy. Such was the function of the allied navies in the last great war. The British Grand Fleet at Scapa Flow, including an American

Squadron, held the German High Seas Fleet in check while British, American, French, Italian and Japanese light craft all over the world cared for commerce movements and escorted the convoys through the submarine areas.

Coast Defense.—As for the third function of the American Navy, that of coast defense, it is substantially accomplished by a fleet adequate for commerce protection, for an enemy can not gain access to our coasts in any great strength unless he has first overcome the main fleet; but nevertheless it would be imprudent not to provide local naval defense. For this

purpose, submarines are particularly suitable, since on approaching a coast for serious operations against it a stop is necessary and this gives the best opportunity for submarine attack.

Thus the function of the Navy in peace time is to make evident to all whom it may concern that this country is prepared to guard its wealth and riches against any attempt to take them from us for the profit of others. In war the function of the Navy is to act against hostile commerce and protect our own and to overcome all opposition to its effort to execute this task.

NAVAL CONSTRUCTION AND EQUIPMENT

BY PETER BAIN

EDITOR, *Bain's Marine Annual* and *Shipping Illustrated*

NEW BUILDING DORMANT

Shadow of Disarmament Conference.—During 1927, the shadow of the Harding Disarmament Conference of 1921 continued to hang heavily, although perhaps less threateningly over and, therefore, against United States naval construction activities and progress. When we say less threateningly, it is implied that during the twelve months' period there developed and grew in intensity a resistance to the circumscribed and more or less indefinite scope of application of the findings of the Conference, the reason or reasons being traceable to a variety of sources as well as to a variety of causes. Expressed briefly, naval construction activity abroad and plans looking to its considerable expansion in the immediate future, while not greatly or directly at variance with the decisions arrived at between Great Britain, Japan and ourselves, pointed rather ominously to the building up by these two countries of naval armaments which in their individual national aggregates tended to place the existing 5-5-3 agreement in about the same category as a "scrap of paper" or worse, if possible.

Building Abroad Disturbing.—Politics aside, national sentiment the

world over is sharply divided on the question of Army and Navy peacetime strengths—offense and defense—assuming as it does aspects of extreme pacificism or its antithesis, the desire to possess the most formidable fighting equipment and personnel within reach. The United States is no different from other nations in these respects, therefore, to those of our people who believe that to be well armed means security, the spectacle of other nations, particularly those treaty-bound with us, devising and building up an extensive and powerful line of fighting machines, whatever the objective, naturally aroused concern and questionings as to whether the Disarmament Conference of 1921 had been all that was claimed for it and, viewed at this distance away in the light of what is transpiring abroad, whether we had gotten as much as an even break.

Passing of Private Shipyard.—Another factor in the 1927 situation relates to the private shipbuilding equipment and facilities of the United States. Not a few private American shipyards in years previous to the Disarmament Conference were not only specially equipped to build but had built the largest as well as the smallest of every type

and class of known naval fighting machine and, notwithstanding the rapid and revolutionary changes that were constantly taking place, had kept abreast of requirements, through new design, remodelling, and replacements of standing ways and building berths, machine tools, efficiency methods and devices, etc. These private shipyards so essential to the welfare of the country in both peacetime and wartime, but necessarily more so in wartime, were not altogether unfitted or unequipped financially to withstand and survive the extreme post-war depression in merchant ship-building but, when the Disarmament Conference came along and stopped practically all naval construction, it is no wonder that in specific instances some "fell by the wayside."

The Case of the Navy Yards.—Again, it should be borne in mind that the United States possesses quite an imposing number of well-equipped Navy Yards, all of which, of course, do not handle new construction, either of the large or small class or type. The practice of building war vessels in Navy Yards is world-wide and follows merchant ship practice, in that while new construction is the objective in both cases, repair and refitting are also undertaken, these latter as expedient, relative to naval service and to the merchant service, in competition with repair and dry dock plants established and equipped for just these specific purposes. Between our Navy Yard and those primarily "merchantmen," a rather wide gulf of trouble, still unbridged, has been opened up since the Disarmament Conference for, although suffering most from the decisions of the latter, but having in the nature of things a somewhat closer contact with official Government which owns our big war-built merchant fleet, it is a matter of common knowledge that from time to time units from the latter have found their way into Navy Yard docks and slips for overhaul, reconditioning, reconstruction, etc.; hence the trouble.

The disability under which Navy Yards as well as those of our private shipbuilders and shiprepairers now operate is lack of work—new

and repair—with which to hold intact the various technical staffs, departmental experts, and trained help generally, against possible national necessities or emergencies in order that either or both may be met and handled promptly and efficiently. Experience during the World War demonstrated through its more or less absence the value of just such an element as personnel preparedness ready at hand.

THE GENEVA CONFERENCE

United States Position.—Having strictly adhered to the terms and agreements of the 1921 Disarmament Conference and appreciating the international advantages and benefits derived therefrom in the interval, the United States Government on the initiative of President Coolidge called, or rather convened, during the past year at Geneva another conference to the end that steps be taken still further to limit national offensive totals, types, sizes and power of naval armaments. It had, of course, been noted that Great Britain and Japan were planning quite stupendous naval expansion programs, backed or apologized for by apparently plausible excuses for such action. These programs, although perhaps not directly contrary to or in violation of the 1921 Treaty, undoubtedly placed the United States naval position in a rather unfavorable light comparatively. To us it had all the appearance of a renewal of international competition in naval armament building and, as in 1921 we had set our face steadfastly against such an eventuality, we continued to do so in 1927.

Conference Fails.—The Conference was a failure, the number and proportionate ratio of fast armored cruisers constituting the stumbling block as erected by Great Britain on the plea that her far-flung Empire demanded preferential treatment; in other words, the 5-5 equality with the United States relative to capital ships must be waived in her favor in the matter of fast armored cruisers, etc. The Conference came to nought in spite of herculean efforts to prolong it in the hope that a mutually satis-

factory understanding, failing a Treaty Agreement, might lead eventually after dispassionate individual consideration to early and complete realization of the objective for which the Conference had been called.

CONSTRUCTION ACTIVITIES

"Lexington" and "Saratoga."—Just here it seems in order to take cognizance of our recent and near-recent naval construction activities. It is generally agreed that naval construction in and on behalf of this country has been practically at a standstill since the World War, the past year included. Aside from overhaul, refitting and reconditioning work carried out at various Navy Yards and some progress on a few new fast cruisers and submarines, all more or less unimportant comparatively and therefore competitively, because lacking somewhat in real up-to-dateness in the case of the former and in numbers in the case of the latter, the outstanding accomplishment of 1927 was the completion and recommissioning of the big airplane carriers *Lexington* and *Saratoga*, products of private shipbuilding yards located respectively at Fore River and Philadelphia.

These unique and imposing craft, originally scrapped as capital ships following the 1921 Disarmament Conference, are each rated as 888 feet in length over-all, 105 feet beam, 31 feet mean draft, and 33,000 tons normal displacement. Their main battery consists of eight 8-inch guns mounted in four turrets. Steam is supplied by 16 boilers to four 35,200 k.w. turbine generators which in turn supply power direct to eight propulsion motors directly connected in pairs to four propeller shafts turning 317 revolutions per minute and developing 180,000 shaft horse power, with a resultant ship speed of 33 knots. The electric propulsion, control, and auxiliary equipment was furnished for both ships by the General Electric Co.

The capacity of each ship is 72 airplanes, comparing with the *Langley*, our only other airplane carrier, the capacity of which is only 30 planes and which, by the way, is a vessel of

but 12,700 tons. Airplane capacity of all three ships is reckoned by the number of planes that can be carried and successfully launched for effective attack by a combatant ship from a coast defense area of 1,000 miles. What we did then in 1927 in the matter of new naval ship construction affected but slightly our comparative international standing of the year before (See THE AMERICAN YEAR BOOK, 1926, pages 393-396).

U. S. Navy Program.—The program presented by Secretary Wilbur of the Navy is easily the most ambitious of the Great Powers since the Armistice. It calls for the construction of seventy-one vessels at a total cost variously estimated as between \$725,000,000 and \$740,000,000, and spread over a period of five years. The Bill as presented to Congress is unusually brief, totally only some 300 words or less but what it lacks in expansiveness, it certainly makes up in expensiveness. It authorizes the President to undertake the construction of 25 light cruisers, 32 submarines, nine destroyer leaders and five aircraft carriers, the latter to be vessel of from 12,000 to 15,000 tons, the latter figure being the limit set by the 1921 Disarmament Conference.

Our new naval program is claimed to be a plain proposition, the purpose of which is to make the United States Navy a well-balanced organization within the limitations of the Five-Power Naval Treaty or, as it is better known, the 5-5-3 ratio of the United States, Great Britain and Japan. The program is now before the House Naval Affairs Committee, but later the main fight on the Bill provisions will certainly be wrapped-up with the whole big question of national armaments, and the Senate particularly may be expected to perform some drastic trimming in view of the fact that many Senators are diametrically opposed to the militarization of the nation.

They refer to the President's speech at Trenton on December 26th, 1926, when he said "I do not believe that we can advance the policy of peace by returning to a policy of competitive armaments. While I favor an

NAVAL AERONAUTICS

adequate Army and Navy, I am opposed to any effort to militarize this nation." The President, in his message to Congress on December 7th, 1926, concerning the proposed expenditure of \$680,000,000 for the next fiscal year for the Army and Navy, and maintaining his standpoint, is further quoted as saying "that it provides the most adequate defensive force our country has ever supported in time of peace and that as a whole our military policy is sufficient."

British and Japanese Positions.—Great Britain at Geneva claimed that she needed 600,000 cruiser tons, while the original United States proposal was for between 250,000 and 300,000 cruiser tons, the latter figure being less than we believed our requirements really warranted. The most recent report received from Great Britain and since the United States program was launched, indicates that their program adopted in 1925 providing for the laying down of one 10,000-ton fast armored cruiser and two of 8,000-tons in each of the years 1927, 1928, and 1929, has been abandoned in so far as the 10,000-ton vessels are concerned, while only three of the total of six 8,000-ton vessels will be built, representing a saving of approximately \$27,000,000. It is understood that the plans for destroyers and submarines remain unchanged and that construction of nine of the former and six of the latter will be included in next year's program. As far as Japan is concerned,

naval authorities there are inclined to adopt a policy of watchful waiting, pending the outcome of the United States naval program in Congress, as, while there has been drawn from Admiral Okada the statement that his country would certainly do something to meet a required minimum of 43 United States cruisers as reported to have been indicated by Admiral Charles F. Hughes, chief of American naval construction, he, Admiral Okada, doubts if Congress will pass such a Bill.

Congress and the President.—The House Naval Affairs Committee in examining our new naval Bill have stricken from it President Coolidge's proposal which provided that the President should have authority to suspend work on new vessels in the event of another Conference on the limitation of armaments, and imposed at the same time a time limit for completion of the \$740,000,000 spending plan. Concerning this latter feature, while readers may be left to draw their own inferences, erasure of the suspension clause seems to smack just a little of competitive international armament building. The large majority in favor of the Bill authorizing the Navy to elevate the guns on existing ships would indicate, however, that Congress is ready to follow the President if need be. Raising the elevation of the guns in ships of the United States Navy has always been bitterly opposed and thwarted by Great Britain.

NAVAL AERONAUTICS

By WILLIAM A. MOFFETT

REAR ADMIRAL, U. S. N.; CHIEF OF BUREAU OF AERONAUTICS

SERVICE

Requirements.—Naval air effort being one of the important elements that make up the whole naval force, it must conform to the same fundamental requirements that control in the development of all naval forces—(1) that it is justified only to the extent that it exerts an important influence on control of sea areas, and (2) that it must be capable of op-

erating effectively in any part of the oceans of the world.

Experience having demonstrated that airplanes in normal operations are, at least in the present state of the art, incapable of operating unsupported on the vast areas of the sea, naval force can not avail itself of the advantages inherent in air operations unless it provides in the Fleet itself means for carrying, main-

IX. DEFENSE AND ARMAMENTS

taining, and efficiently operating aircraft in whatever area it becomes necessary to exert sea power, and unless through constant training there are developed methods for harmonious cooperation between air, surface, and subsurface activities.

Work of this nature is seldom spectacular; it involves few, if any, brilliant or "epoch making" exploits on the part of individuals. It is rather a process of meticulous attention to multifarious details, which to the casual observer cannot but appear commonplace.

Naval seaplanes of service types have during the year established 13 new world's records for seaplanes, for speed, altitude, and duration, with varying useful loads up to two tons, but these things are of importance not so much because they are records, but because they have been accomplished with service equipment, and stand as a sort of barometer of the merit of the patient, painstaking, and unspectacular work of the engineering, training, and operating organizations which they represent.

Transoceanic flights.—Lindbergh, Chamberlin, Byrd, and others during the past year have made flights of personal skill and daring, but they are of real importance to aviation development as a useful agent in the world of affairs because they demonstrate the reliability and dependability and efficiency of aircraft equipment of today. The Navy takes pardonable pride in the fact that the engines and power plant equipment which contributed so largely to the success of all transoceanic flights from this country have been developed entirely under naval supervision with naval funds; that engines of this type have been in extensive use as standard equipment in naval seaplanes for more than four years; and that the engines used in these flights were exact duplicates in all respects of equipment which has been standard in the Navy for more than a year.

DEVELOPMENT

Air-Cooled Engines.—The outstanding development of the year in purely material development has been

full realization of the aim of naval air activities for years past to extend to all sizes of aircraft the advantages in respect of serviceability, simplicity, performance, and economy, which inhere in the use of air-cooled engines through the elimination of weight and complication entailed in the provision of water radiators and cooling systems of the conventional water-cooled engines, and which have been so fully demonstrated in the famous transoceanic flights of the year. All types of naval aircraft purchased during the year, from the smallest to the largest, are now being fitted with one of the four types of air-cooled engines developed under naval supervision. These same engines are already finding their way into commercial activities throughout the country, and are forming an important part of the foundation of commercial air transport.

Metal Construction.—Another noteworthy development is that metal construction has finally taken its place as standard equipment in all service types to the exclusion of composite wood and wire construction. The use of aluminum in float and hull construction in place of wood has now become standard practice in all types of machines. Wood is still used to some extent in wing structures, but even that is going out of practice. In short, all-metal machines are now standard practice.

Cooperation.—Superchargers, long under development, have finally reached the stage where they are being installed in regular service use. But of even more significance is the fact that aircraft in fleet activities have now reached the point where they are accepted as a commonplace part of the day's work of the fleet, by all activities alike. Air and surface operations work in the closest harmony, each supporting and complementing of necessity the efforts of the other.

Aircraft Carriers.—Each battleship, each light cruiser, carries her complement of observation and fighting seaplane. The *Langley*, our one aircraft carrier, has continued to operate as an integral part of the Fleet,

her aircraft regularly participating in all Fleet activities. In the closing months of the year the two new aircraft carriers *Lexington* and *Saratoga* were commissioned and will take their places in the Fleet early in the coming year. Each of these new carriers provides a floating flying field 888 feet long, 106 feet wide, and may be propelled at a maximum speed of 33 knots (38 statute miles per hour).

They are fitted with hangar accommodations, repair facilities, and quarters for operating and maintenance personnel. Each becomes in effect a mobile airdrome, which accompanies the Fleet in all its operations. Each carries and operates about 80 airplanes, the 160 planes of the two carriers together comprising four complete bombing and torpedo plane squadrons, four complete fighting plane squadrons, and two observation plane squadrons. The procurement of planes, organization of squadrons, and training of personnel in the complicated details involved in service of this nature, including coordination and tactical command of the various air and ground service activities, has been one of the major problems of Naval Aviation for the past four years.

With the three carriers and the planes carried on battleships and cruisers, the Fleet now has available an effective air strength of more than two hundred modern planes of all types, fully manned, carefully trained and ready for effective action, in any part of the seas of the world. Aviation in the Fleet is not a spectacular possibility of the future; it is a commonplace actuality of to-day. That is the surest sign of substantial progress.

COASTAL OPERATIONS

An important function of the Navy is the control of coastal sea lanes, protection of coastwise shipping routes. The problems entailed therein are closely allied to the problems in Fleet activities, and require extensive use of aircraft in close cooperation with surface craft. A special phase of this operation is continuous offshore patrol by seaplanes and airships, both rigid and non-rigid. These

operations are best conducted from shore bases. The development of large twin-engine flying boats capable of remaining afloat at sea for long periods has progressed steadily. Such a machine was the PN-10 type, in which Commander John Rodgers remained afloat for nine days on his attempted flight to Honolulu. This has become a standard type and during the past year planes of this type have been placed in production for general service use.

LIGHTER-THAN-AIR ACTIVITIES

The rigid airship has great inherent possibilities for open-sea service, particularly in patrol and scouting our sea areas, because of its great endurance and long range. Its use is principally restricted by the great cost of handling and mooring equipment and ground crews. The development of methods for reducing the cost of handling and maintenance is an even greater problem than the construction of the ships themselves. It is to the solution of this problem that the principal effort in the airship activities of the Navy has been directed during the past year.

These efforts have produced most gratifying results, and have led to the belief that the inherent difficulties and high cost of rigid airship operation have been heretofore greatly exaggerated. During the year plans have been prepared for the construction of a 6,000,000 cubic foot airship under Congressional authority, using data collected as the result of intensive operation of the *Los Angeles* at Lakehurst. Progress is in this respect necessarily slow, due to limited appropriations, but has been satisfactory.

Conclusions.—Naval Aeronautics is on a sound basis. The absence during the year of time-consuming inquiries and investigations into the alleged deplorable condition of aeronautics—many of which have served only to breed discontent, ill feeling, and bitter controversy—has been of the greatest benefit. U. S. Naval aircraft are at least the equal of any in the world, the operating equipment is well developed, the personnel thoroughly trained in its duties. Be-

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hind it are well equipped commercial manufacturing facilities, capable of immediate expansion if needed. The air arm of the Navy is ready to take its place in the defense of our country should the necessity arise.

NAVAL EDUCATION

BY CARROLL STORRS ALDEN

PROFESSOR AND HEAD OF DEPARTMENT OF ENGLISH, U. S. NAVAL ACADEMY

Fleet at New York.—The visit of the United States Fleet to New York for two weeks in May was educational in a double sense. Thirty thousand of the enlisted men saw the great metropolis, and a still larger number of civilians from New York went on board ships of every type in the Navy and formed at least a first acquaintance. If citizens of all States had a similar opportunity, they might recognize more fully the possibilities of the Navy as a great national university.

Special Courses.—During the year 1927 approximately 10% of the officers and 5% of the enlisted men were under instruction at special schools, to say nothing of the much larger number who were taking naval correspondence school courses. The plan is that every one from cook to rear admiral shall have special preparation for the duties devolving upon him.

Since the Conference on the Limitation of Armament in Washington, 1921, a new emphasis has been placed on naval education. If a nation that has pledged itself to limit the number of capital ships is to have a superior navy, the only method that will bring certain results is by study, practice, and high morale to improve the personnel.

Training Stations.—Newly enlisted men are given eight weeks of recruit training at the receiving stations. This is devoted principally to swimming, infantry drill, rowing, personal cleanliness, and care of clothing. In particular the effort is made that every recruit shall qualify in swimming before he is sent to the fleet. In consequence the drowning accidents have been greatly diminished. Of the recruits Secretary Wilbur says, "The fine quality of the men now

enlisting, their progress in personal appearance, bearing, and physical development, and their excellence at drill make the training stations a source of pride to the Navy."

Service Schools.—There are 30 different trades that are being taught to enlisted men at the service schools in different parts of the country and 3,860 men were graduated during the past year. They are trained in what will make them valuable to the Navy and also what will enable those who return to civil life on the expiration of their enlistment to earn a good livelihood. Thus in the year hundreds have qualified as general utility men in aviation, electricians, radio men, machinist mates, stenographers, etc.

Training Courses.—Further, there are 112 navy training courses which the Department offers to men on the ships or at stations; and for instructions in these, 47,727 pamphlets have been issued during the year. Some are of an academic character, others are designed to help a man to qualify for a higher rating, and others are designed to give him a comprehensive knowledge of a technical subject, like the gyro compass or the gasoline engine. A Naval Academy preparatory class is organized each fall at Hampton Roads and at San Diego. By means of this training, 90 enlisted men who passed the mental and physical examination for the Naval Academy were admitted last summer as midshipmen.

The Naval Academy.—There were 1,551 midshipmen in the Naval Academy at the beginning of the academic year 1927-1928. As such a number does not supply enough graduates to meet the various needs of the Service, the Secretary of the Navy in his annual report recommends that the

number of midshipmen appointed by each senator and representative, and appropriated for, hereafter be five instead of three. Educationally, the Naval Academy has sought to progress by (1) higher entrance requirements, (2) a better planning and co-ordination of courses (reviews are more evenly distributed, and there is a greater insistence on fundamentals), and (3) a return to smaller sections for instruction, such as existed previous to the war.

To the non-technical departments—Mathematics, English, and Modern Languages—in which the teaching during the war and the years following had been done almost entirely by civilian professors and instructors, naval officers have been again detailed; as in earlier years, the instruction is thus now being carried on by a combined officer and civilian staff. The officers, who have lately come from sea, give a naval contact and keep before the midshipmen a consciousness of what they are studying for; the more permanent civilian staff, composed of university graduates that have made teaching their profession, are important for shaping the courses and maintaining high scholastic standards. The cooperation of the two is giving excellent results.

Naval Reserve Officers' Training Corps.—The four years' course in naval science and tactics, organized in 1926 at Harvard, Yale, Georgia School of Technology, Northwestern, Washington, and California, has advanced well into its second year. There has been a spirited response, and the limit of 60 freshmen at each institution enrolled for the course has been nearly or quite reached. The Navy Department believes so thoroughly in the project that the proposal has been made to increase the maximum number of students allowed by law from 1,200 to 4,800.

Post-graduate Activities. — Two hundred and twenty-eight officers, apportioned to the following schools, have completed the course during the year: Submarine, at New London; Torpedo, Newport; Aviation, Pensacola; Aviation (lighter than air), Lakehurst; and Chemical Warfare, Edgewood Arsenal. Further, 115 were ordered to the Naval Academy for post-graduate instruction, specializing in ordnance or aerology or mechanical engineering, etc. Their second year will be at Harvard or Yale or Columbia, etc. The new activity at the Post-graduate School of the Naval Academy during the year is the general-line course. This was established August 1, 1927, and 15 officers comprised the first class. Following the year of instruction at the Naval Academy, the second year will be at the Naval War College. "Its mission is the progressive and advanced instruction of line officers in preparation for duty in higher grades." The Department plans in 1928 to double the officers detailed to take this course, and in time may make this the most important of all post-graduate activities.

Naval War College. — The Naval War College at Newport, with 79 officers in two classes, has been working during the year to accomplish its mission, which is, as defined for the senior class, "to assist in the preparation of naval officers for high command in the time of war"; and for the junior class, "to prepare naval officers for duty as members of the staff of a flag officer and as commanders of small units in time of war." The number of line officers on the active list who are graduates of the senior course is, admirals, 36; captains, 148; commanders, 103. The number who are graduates of the junior course, commanders, 5; lieutenant commanders, 48; lieutenants, 24.

COGNATE SOCIETIES

SERVICE SOCIETIES

AMERICAN LEGION.—Indianapolis, Ind.
AMERICAN REMOUNT ASSOCIATION.—Washington, D. C.

AMERICAN SIGNAL CORPS ASSOCIATION.—195 Broadway, New York, N. Y.
ARMY AND NAVY UNION, U. S. A.—315 Hazen Bldg., Cincinnati, Ohio.

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- ASSOCIATION OF MILITARY SURGEONS OF THE UNITED STATES.—Army Medical Museum, Washington, D. C.
- CHEMICAL WELFARE SERVICE.—Edge-wood Arsenal, Maryland.
- U. S. ARMY ORDNANCE ASSOCIATION.—806 Mills Building, Washington, D. C.
- U. S. CAVALRY ASSOCIATION.—1624 H. St., N. W., Washington, D. C.
- U. S. FIELD ARTILLERY ASSOCIATION.—1624 H. St., N. W., Washington, D. C.
- U. S. INFANTRY ASSOCIATION.—1115 17th St., N. W., Washington, D. C.
- MILITARY TRAINING CAMP ASSOCIATION.—19 W. 44th St., New York, N. Y.
- NATIONAL GUARD ASSOCIATION OF THE UNITED STATES.—32nd St. and Lancaster Ave., Philadelphia, Pa.
- NAVY LEAGUE OF THE UNITED STATES.—1749 E. St., N. W., Washington, D. C.
- QUARTERMASTER ASSOCIATION OF THE UNITED STATES.—923 15th St., N. W., Washington, D. C.
- RESERVE OFFICERS' ASSOCIATION OF THE UNITED STATES.—1653 Pennsylvania Ave., N. W., Washington, D. C.
- SOCIETY OF AMERICAN MILITARY ENGINEERS.—810 Mills Bldg., Washington, D. C.
- SOCIETY OF NAVAL ARCHITECTS & MARINE ENGINEERS.—29 W. 39th St., New York, N. Y.
- UNITED STATES NAVAL INSTITUTE.
- PATRIOTIC AND HEREDITARY**
- AZTEC SOCIETY.
- COLONIAL DAMES.
- CONFEDERATE VETERANS.
- DAUGHTERS OF 1812 U. S. NATIONAL SOCIETY.—108 Iona Ave., Narberth, Pa.
- DAUGHTERS OF THE CONFEDERACY.
- DAUGHTERS OF THE REVOLUTION.
- GRAND ARMY OF THE REPUBLIC.
- MILITARY ORDER OF FOREIGN WARS OF THE U. S.—149 Broadway, New York, N. Y.
- MILITARY ORDER OF THE LOYAL LEGION.
- MILITARY ORDER OF THE WORLD WAR.—52 Vanderbilt Ave., New York, N. Y.
- NATIONAL SECURITY LEAGUE.—25 W. 43rd St., New York, N. Y.
- NATIONAL SOCIETY OF THE SONS OF THE AMERICAN REVOLUTION.—608 Hill Bldg., Washington, D. C.
- NATIONAL SOCIETY OF SONS OF THE REVOLUTION.—Princeton University, Princeton, N. J.
- ORDER OF FOUNDERS AND PATRIOTS OF AMERICA.—15 Dey St., New York, N. Y.
- PILGRIM SOCIETY.—Plymouth, Mass.
- SOCIETY OF COLONIAL WARS.
- SOCIETY OF THE WAR OF 1812.
- SOCIETY OF THE CINCINNATI.
- SOCIETY OF MAYFLOWER DESCENDANTS.—44 E. 23rd St., New York, N. Y.
- SONS OF CONFEDERATE VETERANS.—Law Bldg., Richmond, Va.
- SONS OF THE AMERICAN REVOLUTIONARY NATIONAL SOCIETY.—918 F. St., Washington, D. C.
- SONS OF VETERANS.—Reading, Pa.
- SPANISH-AMERICAN WAR.—Navy and Military Order.—184 State House, Boston, Mass.

PART FOUR

ECONOMICS AND BUSINESS

DIVISION X

BUSINESS AND FINANCE

GENERAL BUSINESS CONDITIONS

By S. S. HUEBNER

WHARTON SCHOOL OF FINANCE AND COMMERCE, UNIVERSITY OF PENNSYLVANIA

STATE OF BUSINESS

After two such exceptionally good business years as 1925 and 1926 it was to be expected that business activity should indicate signs of abatement. Such was not the case throughout the entire year, however. In the words of one reviewer, "The course of business during 1927 was characterized by a slow start, a gradual rise to satisfactory levels during the Spring, a seasonal recession during the Summer, a disappointing recovery during the Fall, and a decrease of activity during the final months."

Business Barometers.—An examination of the various barometers of business will show that the above generalization is true in many fields. In certain fields such as the stock market and banking, the distinct prosperity note of 1925 and 1926 was maintained and even strengthened. In the majority of fields, however, including transportation, iron and steel, agriculture, imports and automobile production there are distinct indications of marked recession from the high peaks of the last two years.

Stocks and Bonds.—In the security market, although the 1925 volume of trading exceeded all records for recent times, both with respect to volume of transactions and market appreciation, a new record was established in 1927. As regards volume of

dealing the last year on the New York Stock Exchange exceeded 1926 by nearly 27 per cent, and 1925 by 22 per cent despite the fact that 1925 sales exceeded those of 1919, the previous record year, by 40 per cent. As regards market appreciation railroad shares reached an average level during 1927 which is about 18 per cent above the average for 1926 which, in turn, exceeded the 1925 level by 4 per cent. The value of industrial stocks increased about 14 per cent over the 1926 average which more than makes up for their decline of 2 per cent in 1926 from the record year of 1925. Bonds, likewise, have maintained their price level approximately, owing to favorable low interest rates, the 1927 level being 4 per cent higher than 1926 and thus maintaining the more or less steady upward trend which has distinguished the last few years.

Banking transactions gave the same favorable signs of increasing prosperity by exceeding 1926, the previous record by 10 per cent. Check transactions outside of New York City, however, exceeded the 1926 record by only 5 per cent. It is probable that the latter are the truer index of general business conditions and even they are affected somewhat by the unusually speculative atmosphere so current during 1927

X. BUSINESS AND FINANCE

Brokers loans were unusually large throughout the year. Many consider that they were abnormally large. The reserves throughout the country suffered severe depletions. In the week ending December 28, 1927, as reported by the *Commercial and Financial Chronicle*, brokers loans established a high record for all time. They amounted to \$3,717,622,000 as reported by the member banks of the New York Federal Reserve District. This exceeded the previous week's record total of \$2,799,974,000 by \$73,291,000. The last week of the year marked the climax of an upward movement of loans to brokers and dealers since the low mark of \$2,408,695,000 was set on May 18, 1926.

The huge volume of loans is attributed to heavy stock trading and the large volume of new bond issues. One wonders, however, if this is not "putting the cart before the horse." This feeling is well expressed by H. Parker Willis, editor of the *Journal of Commerce*, "Extremely low rates have undoubtedly had the effect of enlarging bank credit unduly, and of making it easy for the stock market to get rather abnormally cheap money, and hence to bring about an expansion or inflation of values which was not warranted." It is alleged that the Federal Reserve Board has openly used the rediscount rate to promote a supposed program of return to the gold standard abroad, even seeking to force its rates upon unwilling interior banks which regarded money rates as too low. If the foregoing is accepted on its face, it probably discounts entirely the increasing prosperity indications contained in the statistics quoted above.

LEADING INDICES OF TRADE

Financing and Construction.—A brief résumé of the leading indices of trade for the major part of 1927 will serve to show by way of comparison with the similar period of 1926 that the year 1927 could hardly be called one of exceptional prosperity. There were some few additional indices, besides those already discussed, that indicate continued prosperity. New financing in the form of corporate, foreign government, farm loans and

municipal securities, has been on a larger scale during 1927, the increase over 1926 (for eleven months) being 19 per cent. New buildings started in 27 northeastern states ($\frac{3}{4}$ of total United States population) as reported by F. W. Dodge Corporation, during the first eleven months of 1927 show an increase of 3.5 per cent, as compared with 1926. The 1927 eleven months' figure exceeds the total figures of every year except 1926, and there is every indication that a new year record will be made.

Foreign Trade.—The number of business indices adversely affected during the year are numerous, however, as compared with a very few so affected in 1926. Exports of merchandise in 1927 (eleven months) were 2.6 per cent above those of the previous year, i.e., 4,458 millions as compared with 4,343 millions for 1926. Imports of merchandise were 5.3 per cent lower, i.e., 3,854 millions as compared with 4,071 million in 1926. Pig iron production for 1927 (eleven months) totaled 33,635,000 tons as compared with 35,979,000 tons for 1926 or a decrease of nearly 7 per cent; while the average price per ton for 1927, as reported by "The Iron Age," stood at \$21.32 as compared with \$24.81 for 1926.

Railroad Loadings and Earnings.—Average weekly revenue freight car loadings for the first eleven months of 1927 stood at 1,010,831 as compared with the 1926 average of 1,035,136, which, in turn, compares with 989,881 for 1925 and 939,425 for 1924. Gross and net railway earnings also show up poorer month by month during 1927 than was the case during 1926, the October, 1927, gross earnings per mile, as reported by the Interstate Commerce Commission being 2,439 as compared with 2,546 for the corresponding month of the previous year, and the net earnings per mile \$758 as compared with \$816. It was difficult to offset the loss in car loadings by cutting expenses since the roads were faced in 1927 with increased wages, special charges due to floods and a poor coal year.

New Corporations.—New incorporating (often termed the best index of general confidence) was indulged

GENERAL BUSINESS CONDITIONS

in to only about 43 per cent of that of 1926, the figures (for the Eastern states, of new corporations with authorized capital of \$100,000 and over) being \$4,368 millions as compared with 10,095 millions for 1926. This is especially significant in light of the fact that credit was available throughout the year at lower rates of interest, the average time and call rates being $4\frac{1}{4}$ per cent and 4 per cent, respectively, as compared with 1926 rates of $4\frac{3}{8}$ per cent and $4\frac{1}{2}$ per cent.

Business failures also showed an increase in both the number and the total of liabilities involved, and continued this upward trend which was begun in 1925. The number of 1927 (11 months) failures was almost 13 per cent greater and the liabilities involved were over 15 per cent greater than those for the same period of 1926.

INDEX NUMBERS

Commodity Prices.—In view of the decreased volume of business along many lines, as compared with 1926, the general level of commodity prices showed a somewhat normal tendency to decline. This was more true during the first half of the year, strange to note, as prices seemed to make a valiant attempt at recovery toward the close of the year. The twelve months' average for 1927 (\$12.7788, Bradstreets index of wholesale prices of 96 commodities, including food-stuffs) represents a decrease of 1.8 per cent from the 1926 average and seems to continue the general downward movement started in January of that year. December, 1927, the high figure for the year (\$13.5348) is 9 per cent higher than July (\$12.3803) the low for the year. It is a common occurrence, however, for the index number to show an upward trend toward the close of the year.

Wholesale Prices.—Babson's index number of wholesale prices, covering the basic commodities of hides and leather, print cloth, petroleum, iron and steel, rubber, paper, wool, building materials, non-ferrous metals and bituminous coal, showed a greater and more steady tendency toward de-

flation, the November average standing at 155 as compared with 170 for the corresponding month of last year, and the eleven months' total at 155 as compared with 174 for the first eleven months of 1926. These eleven months' averages represent a decline of 10.9 per cent which was most apparent early in the year, but reaffirmed itself after a brief rise in August and September.

Employment.—The decline in prices was accompanied by a corresponding decline in the price and the volume of labor and, although there were comparatively few strikes of large proportions, bread lines have been formed in some of the larger cities. Employment during 1927, judging from the number employed, according to the New York State Department of Labor's figures, was about 4 per cent lower than that of 1926. For the month of November the index number of employed stood at 94 as compared with 99 for November of 1926 and 102 for 1925. The 1927 eleven months' average is 96, whereas the corresponding figures for 1926 and 1925 are 100 and 99. Wages also suffered according to the same figures for the 1927 November aver-

NEW INCORPORATIONS

(In Eastern States with Authorized Capital of \$100,000 and over)

	1927	1926
January	\$739,730,496	\$1,040,096,100
February ...	942,924,950	2,675,185,000
March	307,743,500	748,504,800
April	271,448,310	1,011,931,125
May	202,280,200	867,366,100
June	314,362,800	757,354,807
July	273,906,300	454,865,100
August	325,192,683	505,769,900
September ..	431,292,500	580,386,600
October	243,998,450	901,303,039
November ...	225,803,000	552,786,550
December ...		851,659,529

YEARLY TOTALS

1927 (eleven months) ..	\$4,368,683,139
1926	10,947,208,650
1925	9,886,202,831
1924	7,224,532,050
1923	9,300,737,719
1922	8,400,153,390
1921	7,959,121,300
1920	14,999,044,200
1919	12,678,229,600
1918	2,399,749,600

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INDEX NUMBERS

	Bradstreet		Babson		London Economist	
	1927	1926	1927	1926	1927	1926
January	\$12.8195	\$14.0146	\$167	178	3975	4251
February	12.5153	13.7229	164	177	3928	4189
March	12.5543	13.3985	154	173	4012	4139
April	12.5309	13.1055	148	171	3944	4088
May	12.4405	12.8619	148	172	3921	4053
June	12.4265	12.7594	150	174	3986	4029
July	12.3803	12.7378	150	174	4004	4035
August	12.5930	12.6441	153	174	4002	4045
September	12.9015	12.6968	157	175	4071	4156
October	13.2647	12.7864	156	175	4038	4246
November	13.3937	12.7370	155	170	3996	4237
December	13.5348	12.7835	...	169	3957	4185

YEARLY AVERAGE

	Bradstreet	London Economist		Bradstreet	London Economist
1902	7.88	2003	1915	9.8531	3238
1903	7.94	2197	1916	11.8336	4216
1904	7.92	2136	1917	15.6385	5418
1905	8.09	2342	1918	18.7117	6036
1906	8.41	2361	1919	18.6642	6226
1907	8.90	2508	1920	18.8096	7746
1908	8.00	2223	1921	11.3695	5004
1909	8.51	2231	1922	12.1186	4303
1910	8.98	2407	1923	13.4028	4339
1911	8.7129	2542	1924	12.8672	4661
1912	9.1867	2699	1925	13.9445	4534
1913	9.2115	2704	1926	13.0207	4137
1914	8.9985	2643	1927	12.7788	3986

CORPORATE FINANCING

(Source of Data—*Babson's Reports*)

	1927		1926	
	Capital	Refunding	Capital	Refunding
January	\$507,503,100	\$102,531,800	\$545,842,664	\$ 68,706,575
February	540,587,655	245,061,080	381,093,420	33,095,000
March	392,426,255	101,947,000	443,231,657	37,168,000
April	389,914,880	131,581,150	331,515,980	111,069,770
May	446,071,520	265,789,450	441,631,380	12,237,000
June	538,295,367	169,252,700	379,038,950	93,362,700
July	341,658,181	29,436,500	414,635,120	59,748,000
August	277,831,769	166,446,000	176,155,280	67,294,500
September	372,585,392	78,778,550	283,231,113	45,474,200
October	574,379,763	159,700,850	276,705,784	73,776,300
November	403,364,642	214,189,800	330,693,767	264,542,925
December .....	.....	.....	353,227,605	76,076,000

YEARLY TOTALS

	Capital	Refunding
1927 (11 months)	\$4,784,618,524	\$1,664,714,860
1926	4,357,002,720	942,550,970
1925	4,100,725,167	637,384,524
1924	3,322,295,764	516,275,300
1923	2,712,996,155	530,343,942

THE SECURITIES AND MONEY MARKETS

age was 216 as compared with 230 for 1926 or a decline of 6 per cent. Wages held their own fairly well during the first of the year and this held back the average (11 months) decline to 3 per cent of the 1926 average for the same period. For

the first eleven months of 1927 the average was 223, whereas for 1926 and 1925 the corresponding averages were 230 and 222. It will be of interest to note that these pay roll employee averages are based on June, 1924, as 100.

THE SECURITIES AND MONEY MARKETS

By S. S. HUEBNER

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THE STOCK MARKET

General Conditions.—Like 1926, 1927 was marked by a tremendous volume of transactions in the stock market, setting a new high record for all time. This condition was accompanied by the general increase in market values more marked in some groups than in others. The year seems to have repeated the conditions found in 1925 when there was such a great rise in security values. Throughout the past year industrial dividend payments have been very large, these setting another new high record. They explain in some measure the appreciation so common throughout the market.

Volume of Stock Transactions.—The volume of trading during 1927 was extraordinary. The shares traded on the New York Stock Exchange totaled over 565 millions as compared with 451 millions for 1926, 461 millions for 1925, 282 millions for 1924, and 317 millions for the post-war banner year of 1919. The year exceeded 1926 by nearly 27 per cent and 1919, just before the great liquidation of 1920, by over 82 per cent. In fact, the present year's total of 565 million shares exceeds the combined total of 1923 and 1924 by 47 million shares. Moreover, stock transactions during 1927 have been larger, month by month, with but two exceptions than ever before. January was the only month recording less than 35 million shares. However, transactions in most months exceeded 45 million shares and from August to the end of the year the monthly totals were consistently 50 million shares or over.

Railroad Stock Prices.—Price changes showed almost as phenomenal increase as the volume of transactions. This is illustrated by Babson's composite quotations for different groups of selected stocks. As regards his list of 20 representative railroad stocks, the 1927 eleven months' high average stands at 136.67 (although the highest for the 11 months was 144.82 in October), as compared with the 116.22 high average for the 12 months of 1926, 102.63 average for all of 1925, 88.41 in 1924 and only 74.72 in 1921. Compared with 1926 the present 11 months' average represents an increase of over 18 per cent in market value. Compared with the corresponding average of the last depression year of 1921, the increase exceeds 83 per cent. The probable cause of the present high level of railroad stocks is that the revenue freight car loadings for the early months of 1927 compared favorably with 1926, likewise the gross railroad earnings per mile kept up fairly well until the middle of the year. The net earnings per mile did not show a decrease until after March and, although this was very marked thereafter, easy money on the stock market probably offset its effect entirely.

Industrial Stock Prices.—Taking Babson's composite prices for 20 leading and representative industrial stocks the same general increase is noted, but the average percentage of increase is not as great as that noted above in the railroad stocks. The average monthly high price maintained a steady upward tendency during the first ten months of the

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year from 156.56 in January to 199.78 in October, showing a slight recession in November to 198.21, but with every indication that the last month of the year will set a new high record. The November average (198.21) compares with 166.64 for the month of August in 1926, the highest record of that year, and with 157.41 for the 12 months' average of 1926, 137.95 for 1925, 102.75 for 1924, and 75.77 for the last depression year of 1921. With respect to industrials, while the record price level of the previous year was very markedly exceeded, the percentage of appreciation, about 14 per cent, is lower than for the railroad stocks, 18 per cent, because of the lower base price (\$116.22, 12-month 1926 average), used in computing the latter percentage.

Copper Stock Prices.—Turning next to the copper group, we find that the insignificant appreciation in stock prices in 1926 was not duplicated. There was a considerable increase in 1927. Again taking the Babson composite prices for 20 leading and representative copper stocks, we find that the average price for November, 1927, was 39.1 or about 20 per cent in excess of the average price of 32.5 for the corresponding month in 1926. The 1927 eleven months' average stands at 33.7 against 29.8 for the same period in 1926, 28.2 in 1925, 25.3 in 1924, and 25.9 for the depression year of 1921. The average New York quotation for

copper as reported by the *Financial and Commercial Chronicle* for Dec. 31, was 14.0 per pound as compared with 13.375 per pound a year ago and 13.866 for December, 1925, and 14.26 for the corresponding month in 1924.

THE BOND MARKET

Sales.—During 1927 bond sales on the New York Stock Exchange aggregated \$3,269,037,200, or nearly 10 per cent more than the total of \$2,987,133,150 for the corresponding period of 1925. It should be noted that 1926, as reported last year, represented a decrease in sales of nearly 13 per cent as compared with the year 1925. While this year's sales exceed those of 1926, they are not extraordinary when compared with those of recent years. Notice has been directed more to stocks than to bonds.

Price Level.—With respect to the price level, the 1927 bond market maintained a gradual upward movement (of 3 or 4 per cent) which had been going on for the previous three years. The bond market, as is usually the case, experienced its marked rise before the main movement in price appreciation occurred in stocks. Using Babson's composite list of 20 leading and representative bond issues, it appears that from the average low of 69.4 (for May, 1920), the bond market returned rapidly to an average of 86.9 for December, 1922, an increase of 24 per cent and, as explained last year, this rise repre-

SECURITY MARKET PRICES

(Babson Averages of New York Stock Exchange Prices)

20 R.R. Stocks			20 Ind. Stocks			20 Rep. Copper Stocks			20 Rep. Bonds		
	1927	1926		1927	1926		1927	1926		1927	1926
	High			High			Average			Average	
Jan.	122.56	113.12	Jan.	156.56	159.00	Jan.	31.9	28.9	Jan.	94.8	91.6
Feb.	129.16	111.06	Feb.	161.96	162.31	Feb.	31.7	29.9	Feb.	94.8	92.2
March	130.30	111.21	March	161.78	153.13	March	32.0	27.5	March	95.4	91.8
April	133.83	109.13	April	167.36	144.83	April	32.4	27.9	April	96.4	92.8
May	137.35	110.23	May	172.96	143.43	May	32.4	27.7	May	96.6	92.9
June	138.18	114.17	June	171.98	154.03	June	31.2	28.3	June	95.7	93.4
July	141.26	116.52	July	182.61	160.58	July	32.0	30.3	July	95.8	93.0
Aug.	142.97	121.06	Aug.	190.63	166.64	Aug.	37.1	32.3	Aug.	96.5	92.9
Sept.	143.05	123.33	Sept.	198.97	166.10	Sept.	36.2	31.3	Sept.	97.2	93.1
Oct.	144.82	121.83	Oct.	199.78	159.69	Oct.	37.8	31.2	Oct.	97.8	93.2
Nov.	140.85	119.53	Nov.	198.21	157.37	Nov.	39.1	32.5	Nov.	98.6	93.9
Dec.	.....	122.48	Dec.	.....	161.86	Dec.	....	32.5	Dec.	....	94.2

THE SECURITIES AND MONEY MARKETS

MONEY RATES

(Source of data—Babson's Statistical Service)

	New York Monthly Average				Average Bank Rates: England, France and Germany		Gold Movements	
	1927		1926		1927	1926	1927	1926
	Time	Call	Time	Call				
January	4 1/4	4 1/4	4 3/8	4 3/4	5 1/2	6 1/2	\$4,465,000	\$16,264,332
February	4 1/8	4 1/8	4 3/8	4 7/8	5 1/2	6 1/2	19,895,000	21,564,281
March	4 1/4	4 3/8	4 3/8	4 1/2	5 1/2	6 1/2	10,757,000	39,188,012
April	4 1/4	4 1/4	4 3/8	3 7/8	5	6	11,911,000	4,768,232 *
May	4 1/4	4 1/4	4 1/4	4	4 3/8	6	31,702,000	6,408,262 *
June	4 3/8	4 1/4	4 1/8	4 1/8	5 1/2	5 7/8	12,771,000	15,544,558
July	4 1/4	4	4 1/8	4 1/4	5 1/2	5 7/8	8,935,000	14,750,518
August	4 1/8	3 5/8	4 3/8	4 5/8	5 1/2	6 1/2	6,353,000	17,764,423 *
September	4 1/8	3 7/8	4 5/8	5	5 1/2	6 1/2	11,465,000 *	7,494,056 *
October	4 1/8	3 7/8	4 5/8	4 5/8	5 1/2	6 1/2	8,642,000 *	7,701,419
November	4 1/8	3 1/2	4 1/2	4 3/8	5 1/2	6 1/2	53,184,000 *	9,010,682
December .....	...	...	4 1/2	5	...	6	.....	9,800,000

* Indicates excess of exports.

sents one of the most sensational in the history of the American bond market, and occurred, as is customary with great bond price movements, during a period of business depression and low interest rates. Despite minor fluctuations the level of bond prices has remained reasonably constant since the close of 1921 and for the month of November, 1927, the Babson average stands at 98.6 as compared with 93.9 for the corresponding month of 1926, 92.9 for the 12 months' average for 1926, 89.9 for 1925, 87.3 for 1924, 84.4 for 1923 and 86.9 for 1922. The relatively easy bond market as contrasted with the market for stocks is probably largely attributable to the exceptionally easy money market.

THE MONEY MARKET

Commercial Paper.—Notwithstanding the activity of general business during most of the year and the volume of security market transactions at the highest level of prices, credit has remained plentiful throughout the year and at low rates of interest. In fact, the year 1927 has shown a smaller tendency toward a hardening of rates than did the years 1926 or 1925, and at no time has there been an indication of credit stringency. For the month of November, 1927, the latest month for which rates are obtainable, the monthly average rate

on four to six months' prime commercial paper at New York was 4 1/8 per cent as compared with an average rate (by months for the first eleven months of the year) of 4 1/4 per cent. The eleven months' average thus far is slightly less than that for the corresponding periods in 1926 (4 3/8 per cent) but above 1925 and 1924 (both 4 1/8 per cent) and compares with corresponding yearly averages of 5 1/8 per

SECURITY MARKET TRANSACTIONS

	1927	1926
January	34,275,410	38,987,885
February	44,162,496	35,725,989
March	49,211,663	52,271,691
April	49,781,211	30,326,714
May	46,597,830	23,341,144
June	47,778,544	38,354,575
July	35,575,576	36,691,187
August	51,205,812	44,491,314
September	51,576,590	37,030,166
October	50,289,449	40,437,374
November	51,016,335	31,313,410
December	50,636,794	41,973,806

	Stocks *	Bonds †
Total, 1919...	312,875,250	3,771,517,575
1920...	223,931,349	3,955,036,900
1921...	172,712,716	3,504,814,845
1922...	258,652,519	4,093,696,027
1923...	236,115,040	2,753,506,630
1924...	281,991,597	3,828,019,845
1925...	461,404,733	3,398,346,045
1926...	450,845,255	2,987,133,150
1927...	565,107,700	3,269,037,200

* Stocks are in number of shares.

† Bonds are in dollars' worth of par value.

cent, $4\frac{1}{2}$ per cent, $6\frac{7}{8}$ per cent and $7\frac{1}{2}$ per cent for the years 1923, 1922, 1921 and 1920.

Call Loan Rates.—In call loan rates at New York, we note the same tendency towards a decline. The November average in 1927 stood at $3\frac{1}{2}$ per cent, which is the lowest average for any month since December, 1925. The eleven months' average for the year is only 4 per cent, as compared with $4\frac{1}{2}$ per cent for the same period in 1926, $4\frac{1}{8}$ per cent for 1925, $3\frac{1}{8}$ per cent for 1924, $4\frac{7}{8}$ per cent for 1923, 6 per cent for 1921 and 8 per cent for 1920.

Federal Reserve Factor.—Continuance of the remarkably low level of interest rates on both time and demand loans is quite unusual, especially in light of the general market and business conditions noted heretofore. Comment has been common and explanations have been numerous. The one that seems to bear the most weight is that the Federal Reserve Banks, in attempting to aid the stabilization of European currencies, have lowered the rediscount rates and have kept them low, despite conditions that would seem to suggest otherwise.

BANKING TRANSACTIONS

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TOTAL CLEARINGS

The measured, conservative attitude in judging business conditions is that one should consider as many of the indices, or so-called business barometers, as possible. The consensus of the majority seems to be, however, that bank clearings constitute the best single business barometer that we have at the present time. They might better be called a thermometer in view of the fact that they are more nearly a reflection on present conditions than an indication of future conditions. Their general acceptability is based on the fact that they are so complete nationally and that they reflect nearly all lines of business activity.

For the first eleven months of 1927, check transactions exceeded any previous record. The total stands at \$647,589,935,000 as compared with 588 billions for the same period of 1926, 548 billions for 1925, 471 billions for 1924, 450 billions for 1923, 421 billions for 1922, and 439 billions for the eleven months of the former record year of 1920. The 1927 record thus exceeds the figure for 1926, for the first eleven months period, by 10 per cent, and the pre-depression year (1920) by 55 per cent.

These figures and comparisons alone are not indicative. We must

make allowances for the normal increase in the nation's general economic development. An additional reducing factor is great activity of the Stock Exchange which accounts for much of the growth indicated above. This is shown by the fact that New York banks are responsible for the greater part of the increase. When these allowances are made it is probably safe to conclude that business in 1927 experienced a slight recession from the 1926 high peak.

TRANSACTIONS OUTSIDE NEW YORK CITY

With a view to excluding from the nation's total bank clearings, the huge volume of clearances arising from the speculative markets of New York City, it is essential to note the figures for the country, exclusive of this outstanding speculative center. On their face they indicate the maintenance of the high level of business activity of 1926, but they, too, must be discounted somewhat for the wave of stock speculation of 1927 which has passed all previous marks. Exclusive of New York City, clearings for the first eleven months of 1927 totaled \$294,970,202,000 as compared with 281 billions for the same period of 1926, 265 billions for 1925, 235 billions for 1924, 234 billions for

BANKING TRANSACTIONS

1923, 200 billions for 1922, only 181 billions for the depression year of 1921, and 221 billions for the previous record year of 1920. The present year thus shows a gross increase of about 5 per cent in bank clearings (outside New York) as compared with the year 1926, 11 per cent over 1925 and 33 per cent over 1920.

The year's clearings (January 1 to December 31) for the various Federal Reserve districts give an interesting picture and illustrate the unbalancing importance of the large speculative centers. The following increases over 1926 are noted: Boston district (14 cities) 5.1 per cent; New York (14 cities) 10.4 per cent; Cleveland (15 cities) 2.0 per cent; Chicago (29 cities) 2.0 per cent; San Francisco (28 cities) 1.9 per cent. In seven of the districts there were losses (as compared with three districts showing losses in 1926 over 1925), namely: Philadelphia (14 cities) 2.8 per cent; Richmond (10 cities) 5.2 per cent; Atlanta (18 cities) 10.8 per

cent; St. Louis (10 cities) 1.1 per cent; Minneapolis (13 cities) .2 per cent; Kansas City (16 cities) .8 per cent; Dallas (12 cities) 2.5 per cent. The net result of these Federal Reserve district figures shows a gross gain of but one-tenth of one per cent outside of New York City. A factor, however, which increases the importance of this small amount is the change in the general level of commodity prices. An increase in this often fully explains away increase in bank clearings as an indicator of favorable business conditions. Bradstreet's number average for the twelve months of 1927 is 12.7788 or a decline of almost 2 per cent from the 1926 figure of 13.0207 for the same period.

NEW YORK CLEARINGS

The New York City bank clearings amounted to \$352,619,633,000 for the first eleven months of 1927, as compared with 307 billions for the corresponding period of 1926, 283 billions in 1925, 236 billions in 1924 and 219

CHECK TRANSACTIONS

(000 omitted)

(Source of data—Babson's reports)

	Exclusive of New York		Inclusive of New York	
	1927	1926	1927	1926
January	\$26,973,913	\$26,981,566	\$58,231,797	\$57,519,317
February	23,704,499	22,888,747	51,143,902	47,701,452
March	27,468,436	26,712,632	61,960,616	59,718,169
April	27,088,449	25,798,025	59,095,424	55,097,839
May	28,147,633	24,545,255	59,317,770	51,116,108
June	27,248,919	27,618,049	60,257,170	55,814,114
July	26,363,394	26,763,364	57,113,373	54,422,552
August	25,262,093	23,707,234	56,915,545	49,940,551
September	26,754,366	24,296,210	60,123,236	49,914,299
October	28,783,414	27,200,910	62,874,236	55,955,719
November	27,275,098	24,799,539	60,556,766	50,589,857
December		28,090,322		60,667,124

YEARLY TOTALS

	Exclusive of New York	Inclusive of New York
1927.....	\$324,438,783*	\$714,405,188*
1926.....	309,401,853	648,457,101
1925.....	292,394,131	605,760,384
1924.....	260,310,695	523,957,472
1923.....	256,556,999	495,097,836
1922.....	222,152,058	463,987,457
1921.....	199,087,442	405,976,001
1920.....	242,069,771	484,500,290
1919.....	210,547,763	457,970,614

* Last month estimated.

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billions in 1920. Thus, 1927 shows increases over the two preceding years of 46 and 70 billions respectively. New York clearings for the past eleven months also exceeded those published for the rest of the country by about 58 billions. Such a showing, as mentioned above, emphasizes the importance of considering New York City separately when interpreting the nation's bank clear-

ings, especially since it is the great stock and bond market center, as well as the speculative market for leading commodities, such as cotton, sugar, coffee, rubber, and the semi-precious metals. As has already been explained, the volume of stock market transactions for 1927 has been so large as to cause no little apprehension even among the brokers themselves.

FOREIGN TRADE

BY ROLAND L. KRAMER

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TRADE EXPANSION

According to a statement published by the United States Department of Commerce, the foreign trade of the United States for the fiscal year 1926-27 continued to show the expansion which has steadily been maintained since the post-war-depression of 1921.

Exports and Imports.—Total exports and imports for the year were slightly greater than for the preceding year. The advance in the export trade was nearly counterbalanced by the decline in imports. Except for the year 1920-21 the exports

for 1926-27 were the greatest in point of value that the United States has ever attained. The value of imports, on the other hand, declined from the figures for 1925-26, in which year the greatest post-depression value of imports was recorded. This was due principally to the lower price prevailing for crude rubber which witnessed a decline of 42% from the preceding year. The Department of Commerce publishes the following significant statement: "If allowance be made for changes in price levels, it appears that both the exports and imports were larger in actual quan-

MERCHANDISE EXPORTS, IMPORTS, AND BALANCE OF TRADE

(Millions of dollars)

Period	Merchandise				Excess of Exports (+) or Imports (—)		
	Exports		Total Imports	Per Cent Imports are of Exports	Merchandise	Gold	Silver
	Total	Domestic					
1910-1914 (average) ..	2,166	2,130	1,689	78.0	+ 477	+ 17	+20
1921-22	3,771	3,700	2,608	69.2	+1,163	—441	— 8
1922-23	3,957	3,887	3,781	95.6	+ 176	—235	— 9
1923-24	4,312	4,224	3,554	82.4	+ 758	—407	+19
1924-25	4,865	4,778	3,824	78.6	+1,040	+115	+37
1925-26	4,753	4,653	4,465	93.9	+ 289	— 97	+29
1926-27	4,968	4,868	4,253	85.6	+ 716	—148	+21
January-June, 1925 ..	2,363	2,320	2,064	87.3	+ 300	+150	+18
July-December, 1925 ..	2,547	2,499	2,163	84.9	+ 384	— 16	+16
January-June, 1926 ..	2,207	2,155	2,302	104.3	— 95	— 81	+12
July-December, 1926 ..	2,601	2,557	2,129	81.8	+ 473	— 16	+10
January-June, 1927 ..	2,367	2,311	2,124	89.8	+ 243	—132	+11

From Trade Information Bulletin No. 507, U. S. Dept. of Commerce, Bureau of Foreign and Domestic Commerce, Washington, D. C.

tity during the past fiscal year than in any previous year on record."

BALANCE OF TRADE

Gold and Silver.—Net imports of gold during the year 1926-27 showed a fifty per cent increase over those of the preceding year, while net silver exports were sustained at approximately the same amount which they have recorded for several years.

Export Gain.—The "favorable" merchandise balance of trade as shown in the preceding table marked an increase of 250% over the balance for 1925-26. Considering also the gold and silver balances, the past year records an export or "favorable" balance of visible trade amounting to 589 million dollars. Since the international balance of payments is compiled only for calendar years, it is impossible to determine the invisible items which offset as well as augment this balance.

COMMODITY CHARACTER OF FOREIGN TRADE

On the basis of the figures given for total exports and imports, the commodity character of the foreign trade may be indicated by percentages in the following table:

	Crude Ma- terials	Crude Food- stuffs	Mfd. Food- stuffs	Semi- Mfres.	Fin- ished Mfres.
1926-27					
Exports	27.1	7.8	10.2	14.3	40.6
Imports	38.8	12.3	10.5	17.9	20.6

EXPORTS

Crude Foodstuffs.—The most notable change in the commodity character of the export trade occurred in the crude foodstuffs group which constituted 2.4 per cent more of the exports than in the preceding year. Most conspicuous in this expansion was wheat and flour which registered a gain of more than 100 per cent over 1925-26. This increment applied in both quantity and value.

Manufactured Foodstuffs.—Other groups in the export trade showed changes from the levels of the preced-

ing year but only in manufactured foodstuffs did the change exceed one per cent. In this case a decline of 1.2 per cent from the preceding year occurred and this is explained by the Department of Commerce by reason of smaller shipments of meats and refined sugar and a lower average price for lard.

Crude Materials.—There was a marked quantitative gain in the exports of crude materials but a very slight increase in value due to lower prices, which was particularly pronounced in raw cotton. Coal and coke exports nearly doubled in quantity over 1925-26, due to the British coal strike. In the group of semi-manufactures, large aggregate but slight relative gains were made in iron and steel articles, copper and chemicals.

Finished manufactures although showing a slight decline from the preceding year still command by a wide margin all other groups in the export trade. Agricultural implements and cotton manufactures showed declines from 1925-26 in excess of 10 per cent, while automobile tires recorded a substantial advance and automobiles and industrial machinery increased 8 and 7 per cent respectively.

IMPORTS

Crude Materials.—In the import trade, a shrinkage of nearly four per cent in crude materials occurred, due entirely to the lower price of crude rubber as well as to quantitative and value declines in wool. Raw silk likewise was affected by a price reduction but a quantitative increase of 14 per cent over 1925-26 reestablished silk in the leading rôle of import commodities, displacing rubber.

Manufactured foodstuffs reflected the higher price which prevailed for cane sugar and recorded an increase of 1.5 per cent over 1925-26. Finished manufactures likewise showed an increase over the preceding year but no particular explanation for this can be offered.

Miscellaneous.—Offsetting the great decline in crude rubber imports were substantial increments in many other import lines, particularly pa-

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per, refined oils, furs, copper, flaxseed, leaf tobacco and cocoa beans in addition to cane sugar, already mentioned. Burlaps registered a sharp decline.

DISTRIBUTION OF FOREIGN TRADE

The following table shows in percentages the geographical distribution of the foreign trade for the year 1926-27:

	Northern N. A.	Latin America			Europe	Asia	Oceania	Africa
		Southern N. A.	South America	Total				
Exports to	16.0	8.4	9.1	17.5	48.2	11.8	4.3	2.1
Imports from ..	11.4	12.2	12.5	24.7	29.8	30.7	1.4	2.0

Europe maintained its lead as the foremost market for American exports but the relative importance of Europe in our export trade continued to show the decline from pre-war percentages.

Other continents show an increase in relative importance as compared with their pre-war position, this being especially pronounced in the case of exports to Asia, Oceania, South America and Africa. Our North American markets record a moderate relative but large actual increase over pre-war figures. In all instances with the exception of Europe and Southern North America, value as well as percentage increases were recorded as compared with the figures for 1925-26.

Import Data.—With the exception of Asia, Oceania and Africa, the continents showed an increase in percentages of our import trade in 1926-27 over the preceding year, but due to the shrinkage in the import trade, an increase in actual value of trade was shown only for North America. Asia suffered a loss of 2.6 per cent in relative importance in the import trade compared with 1925-26, this being due principally to the decline in the price of rubber. As a result of the slight improvement in the position of Europe, Asia maintained a lead of less than 1 per cent in the import trade in 1926-27. Compared with pre-war figures, Europe shows a decline almost as great as the 100 per cent increase in the importance of Asia in the import trade. Changes in position in the import trade, however, since pre-war days have not been as pronounced as in the case of exports.

SUMMARY

The foreign trade situation in 1926-27 was highly gratifying. The agricultural and industrial activities of the country profited by the expansion of foreign markets, while the decline in imports was traceable to price recessions rather than quantity shrinkages. The entire post-war trend, indicative of relocation in both commodity and geographical distribution, is faithfully pursued.

COMMERCIAL TREATIES

Spain.—The year ended December 31, 1927, was marked with few treaty negotiations and consummations on the part of the United States. The temporary treaty with Spain was extended for an additional period of six months from May 26, 1927, and from the expiration date of November 26, 1927, an indefinite extension was agreed to, subject to termination upon three months' notice by either country or by the conclusion of a new commercial treaty. This arrangement grants to the United States most-favored-nation treatment in Spanish tariff rates.

Turkey and France.—An agreement as of February 17, 1927, was entered into with Turkey for the maintenance of the status quo in relations with that country. Effective November 21, 1927, France replaced on American goods substantially the old duties for which new duties under the French tariff revision had been substituted. This action had led to a controversy with the United States on the subject of alleged discrimination and discussion of a new commercial treaty is momentarily anticipated.

THE WORLD ECONOMIC CONFERENCE

THE WORLD ECONOMIC CONFERENCE

BY HENRY CHALMERS

CHIEF, DIVISION OF FOREIGN TARIFFS, DEPARTMENT OF COMMERCE

INTERNATIONAL PRECEDENT

Significance.—The World Economic Conference held at Geneva in May, 1927, made up of unofficial but eminent representatives of fifty countries including the United States, has already assumed the nature of a landmark in the progress of international cooperation. It was the first comprehensive gathering of the nations of the world for the purpose of consulting upon a wide range of economic problems and difficulties, with the double objective of seeking means for the removal of the obstacles in the way of the revival of general prosperity, and of establishing such principles in economic affairs as would help to remove the causes for international friction and ensure world peace.

COMPOSITION AND WORK

Membership.—The Conference was attended by 194 members, accompanied by 157 experts, representing practically all countries of economic importance, whether members of the League of Nations or not. While not spokesmen of official policies, the delegates were chosen by their governments as persons eminently qualified and representative in their respective fields of economic activity and interest.

The Field Covered.—The work of the Conference took three forms: (a) An elaborate preparatory documentation, worked up by the Secretariat of the League with the assistance of experts and organizations in various countries, which contributed a most valuable picture of the current economic situation and problems; (b) Addresses at the plenary sessions by representatives of the various nations, which when taken together, served as a composite diagnosis of the current economic difficulties, and of the remedies suggested for these problems designed to promote general prosperity and peace; (c) The intimate deliberations of the three com-

missions—on Commerce, Industry, and Agriculture,—into which the Conference was resolved after the first week, and their subcommittees, where the effort was directed to developing a series of principles and recommendations to govern national or international action, designed to aid in the attainment of the ends desired.

Specific Objectives.—While the general questions on the agenda were regarded as of world importance, it was recognized that many of the problems and difficulties were, to an extent, peculiar to the countries of Europe, which had felt most the results of dislocations brought on by the war and its aftermath. Particular prominence was given to two classes of questions, namely, the problems of commercial and tariff policy, sometimes referred to as "trade barriers problems," and the proposals for international industrial agreements, referred to also as the "cartelization movement."

RESOLUTIONS ON COMMERCE

Trade Policies Involved.—In the field of commerce the World Economic Conference made its most notable contribution through the clarification of problems and the establishment of principles which, as they are accepted by the individual countries and embodied into actual policies and international agreements, should go far toward bringing about greater stability and simplicity in tariffs, less restriction on the exchange of products, and more equitable trade relations between nations.

It was repeatedly emphasized at the Conference, from a wide range of countries, that the elevation of tariffs and imposition of restrictions on trade had been carried too far, and that general trade and prosperity could not fully recover, especially in Europe, unless nations generally were ready for the accommodation of their trade policies to each other's needs,

and a general moderation of the hindrances to international exchanges.

Liberty of Trading.—Declaring that a return to effective liberty of international trading is one of the primary conditions to world prosperity, the Conference recommended that nations should, by concerted action, abolish import and export restrictions and prohibitions. A diplomatic conference of official government representatives, for the purpose of giving effect to this recommendation was endorsed. (For statement of results of this Conference, see "Foreign Trade Control.")

The granting of privileges or immunities to state enterprises in competition with private undertakings was condemned. More liberal policies in the treatment of foreign nationals and companies, in the exercise of their commercial activities abroad, were recommended as an essential condition of economic cooperation between nations.

COMMERCIAL POLICIES AND TREATIES

Tariff Barriers.—Without attempting to take any dogmatic position with regard to the much-controverted question of tariff levels, the Conference did declare that the time had come to put an end to the increase in tariffs and to move in the opposite direction. It recommended that nations should take steps forthwith, by individual or concerted action, to remove or diminish all tariff barriers that gravely hampered trade, starting with those which have been imposed to counteract the effects of disturbances arising out of the war. In the discussion of this problem, attention was frequently called to the enviable situation of the United States where no barriers exist to the unrestricted flow of trade within the vast area comprised by the 48 states, in contrast to the somewhat similar area of Europe which is divided into about twenty-five separate customs entities, each with its special system of trade regulation. The striking statement was made that, since the war, customs frontiers to the extent of about 12,500 miles had been added to the face of Europe.

Most-Favored-Nation Treatment.—The mutual grant of unconditional most-favored-nation treatment as regards customs duties and conditions of trading was strongly recommended as an essential condition of the free and healthy development of commerce between states. It was declared highly desirable, in the interests of stability and security in trade, that this treatment should be guaranteed for a sufficient period by means of commercial treaties, and that the scope and form of the most-favored-nation clause should be of widest and most liberal character.

Raw Materials Duties.—On the principle that the free circulation of raw materials is one of the essential conditions for healthy industrial and commercial development of the world, it was recommended that the exportation of raw materials should not be unduly burdened by export duties or other taxes, and that where such are justified by fiscal needs or by exceptional or compelling circumstances, they should be as low as possible and should never discriminate between different foreign destinations.

CUSTOMS TARIFFS

Simplification Urged.—Distinguishing between the substance of height of import tariffs and their form or manner of application, the Conference made a number of concrete recommendations. It urged the simplification of customs tariffs, and the avoidance of an excessive number of subheadings, particularly when intended to discriminate between similar articles of different origin. It emphasized the advantages of unification of tariff nomenclature, and took the first steps in designating the means of establishing such a systematic customs nomenclature, to be used both in building customs tariffs and in recording the movement of trade.

Value of Tariff Stability.—Recognizing that the instability of tariffs is one of the most formidable obstacles in the way of establishing and developing permanent and secure trade relations between countries, as well as a fruitful cause of serious disputes over trade contracts, the

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Conference recommended that states should refrain from making frequent or sudden changes in their customs duties.

Administration of Duties.—The Conference recommended that any system of investigation in connection with application of *ad valorem* duties or the modification of tariffs shall be framed and administered with full regard for the business interests involved, and for the maintenance of commercial good will among nations; that inquiries or inspections involving inquisitorial procedure or arbitrary methods should be eliminated. In the application of customs duties, states should make provision for equitable procedure of appeal in case of disputes.

Other Recommendations. — The Conference recommended that the Convention on the Simplification of Customs Formalities of 1923 now in force in 25 countries, be ratified by all countries, or that they make arrangements to bring their regulations into line with those principles. In this connection, it was the opinion that consular fees should not be regarded as a source of revenue, but should rather be fixed in amount and not exceed the cost of issue. It was recommended that an express provision be made for right of appeal against any penalties, to be exercised by either importer or exporter, particularly in cases of manifest clerical errors.

INDIRECT MEANS OF PROTECTION

Subsidies and Dumping.—Stressing the hidden dangers inherent in this means of encouraging production and exportation, the Conference declared subsidies, direct or indirect, to be merely palliatives, and hoped that governments would refrain from having recourse to them. While declaring that dumping in international trade should be reduced to a minimum, the Conference advised importing countries, in their defensive steps, not to resort to excessive or vexatious measures.

Standards and Practices.—In the matter of discrimination arising from conditions of transport, widest adherence to existing conventions and

further cooperation in the development of common standards and practices were recommended.

RESOLUTIONS ON INDUSTRY

Production Costs and Prices.—The Commission on Industry took as its central problem the question, how costs of production, and therefore, prices, could be reduced, with the object of securing a better equilibrium between productive capacity and demand, without adversely affecting the interests of the consumers or workers. Stressing that it was mainly preoccupied with the European situation, the Commission concentrated its discussion on three subjects: (1) "Rationalizations," (2) International Industrial Agreements, (3) Industrial Information.

"Rationalization" was stressed as the principal means of attaining the ends in view. That term has come to signify in Europe the methods of technique and of organization designed to secure the minimum of waste of either effort or material; it includes the scientific organization of labor, standardization both of material and of products, simplification of processes, and improvements in the system of transport and marketing. The United States was frequently referred to as the model in this matter, the high efficiency and prosperity attained by Americans being attributed largely to the wide use of the practices here grouped together under the term "rationalization." While pointing out its advantages, particular care was urged in order that the process might not injure the legitimate interests of workers.

"Cartelization."—On the subject of international industrial agreements, sometimes referred to as the "cartelization movement," important differences of opinion became manifest among delegates from different countries, and among the representatives of labor and consumers' organizations as against manufacturers. Under the circumstances, no clear-cut principles or attitudes could be developed. The Conference simply recognized the development as a vital current phenomenon, and declared that it must be considered as good

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or had according to the measure in which those directing them are actuated by a sense of general interest.

It was recognized that in certain cases cartelization might promote efficiency, check uneconomic competition, and reduce fluctuation in industrial activities; these advantages, in turn, making possible greater stability of employment and possibly lower selling prices. On the other hand, the dangers were pointed out of such agreements encouraging monopolistic tendencies, checking technical progress, leading to artificial price advantages, and otherwise injuring legitimate interests of particular classes or countries. The Conference could not accept the various proposals for international regulation of such cartels, and urged the consistent following of the developments in this field, relying upon publicity to prevent the growth of abuses.

Industrial Statistics.—The Conference recommended the systematic collection by each country of industrial statistics of the broadest character, and along comparable lines, declaring that indispensable to effective and coordinated production and the mitigation of fluctuations through the proper adjustment of supply and demand.

RESOLUTIONS ON AGRICULTURE

Price Disparities.—Discussion in this field centered around the complaint that disparity in prices of agricultural products in relation to those on manufactured commodities was causing a widespread depression in agriculture, as a result of which producers in many countries no longer received a sufficient return. It was urged that in view of the

essential interdependence of industry, commerce and agriculture, unless some practical measures were taken to remedy the situation, an injurious reaction on the general welfare was likely.

Cooperative Organizations.—The governmental encouragement of agricultural cooperative organizations of all forms was strongly urged, enforced by more direct relations between producers' and consumers' co-operatives. More adequate credit facilities were recognized as an important need in many countries. The national cooperative credit societies appeared the most suitable form of organization; the League of Nations and the International Institute of Agriculture were, however, requested to examine the possibilities of international collaboration in agricultural credits.

Balance Between Industry and Agriculture.—Moderation of customs duties and other hindrances to the free flow of agricultural products was recommended, in so far as that would not endanger the vital interests of various countries and their workers. In any system of control, it was urged that care be taken to maintain an equitable balance between industry and agriculture.

Spread of Information Urged.—In order that agriculture might have a more exact knowledge of its economic situation, an extension and improvement of agricultural information in all countries along uniform lines was urged, including periodical collection of pertinent statistics and their prompt dissemination to producers, the establishment of uniform farm accounting systems, and the taking of a world wide agricultural census.

RAILROAD TRAFFIC AND EARNINGS

By G. LLOYD WILSON

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YEAR'S RECORD RAILROAD MILEAGE

Operation.—Class I Railroads, those earning railway operating incomes of

over \$1,000,000 per year, operated 238,527.91 miles of main line track-age during the first nine months of 1927 compared with 237,856.51 miles

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during the corresponding period of 1926, an increase of 671.40 miles of line. These same carriers operated an average of 236,579 miles of line in 1925 and 235,894 miles in 1924, so that the gains in the first nine months of 1927 indicate that the average mileage operated for the calendar year of 1927 will carry forward the steady though conservative yearly advances since 1920.

Abandonment.—The mileage included permits granted by the Interstate Commerce Commission to build new mileage and to acquire and operate existing mileage in 1926 and 1927, have more than offset the mileage included in petitions to this body for permission to abandon lines which have been made because of the exhaustion of resources, shifts in population, unsuccessful competition with other instrumentalities of transportation and other causes. The I. C. C. has continued to deny many applications to abandon railroad mileage, the abandonment of which was not found to be economically advisable. In like manner, the Commission has continued to deny applications to build new mileage or acquire and operate existing lines when such construction or acquisition was not found to be justified.

EQUIPMENT

The American Railway Association reports that the railroads of the United States have never had fewer freight cars or locomotives in need of repair than in 1927. Equipment of all classes is in excellent condition. The peak carloadings of October were handled by 24,392 active locomotives with an actual margin of 3,214 stored locomotives ready for active service if required. A reserve of 13.2% of the number of active motive units was maintained, a more than adequate factor of safety. The heavy grain loadings of September and the spring grain crops in Minnesota, Montana, North Dakota and South Dakota,—the largest since 1915—were handled without car shortage. On October 15, the date usually marking the approximate height of the heavy fall crop and fuel movement, there were more than 153,000 freight cars in

serviceable condition available for use. This surplus was greater than for a corresponding period of any recent year.

Great strides were made in the replacement of obsolete passenger and freight locomotives with new motive power equipment of improved design, greater fuel economy, increased speed and greater tractive power. An increase was also noted in the number of Diesel, electric, gasoline and gas-electric locomotives and self-propelling cars. The latter were installed principally on branch lines where light traffic makes standard steam train operation costly.

Progress was also made in the improvement in size, comfort and construction of passenger train equipment. Wooden and part wood and steel coaches of small size and limited conveniences continued to be replaced with larger, all-steel cars equipped with improved lighting, heating, ventilating and seating accommodations. A development worthy of special note was the installation of single room sleeping compartment cars equipped with beds rather than the conventional berths by the Chicago and Alton Railway in service on its crack trains between Chicago, St. Louis and Kansas City.

A further advance was made in the average carrying capacity of freight cars. Old wooden box and gondola cars continued to be retired and replaced by larger all-steel equipment. The average carrying capacity of all types of freight carrying cars in 1927 was approximately 45 tons, an advance of nearly 4 tons per car in the past five years.

FINANCE

Expenditures. — Capital expenditures for railroad equipment of all classes in 1927 were smaller than in 1926. Figures for the first nine months of 1927 place expenditures for new equipment at \$204,992,000, a decrease of \$66,000,000 or 24% compared with the corresponding period of 1926. Expenditures for roadway and structures for the same period of 1927 were \$365,223,000, an increase of \$7,153,000 or 2% over the expenditures for 1926. An increase of more

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than \$6,000,000 was reported in expenditures for heavier rails in 1927 compared with 1926. The proportion of heavy rails of 100 pounds and over per yard has more than doubled in the last decade.

Salaries.—Class I railroads employed monthly average of between 1,730,071 and 1,866,115 persons during 1926 with monthly pay-rolls ranging between \$228,116,868 and \$263,068,531. The yearly average number of employees of all classes in 1926 was 1,807,780 compared with 1,796,099 in 1925. The aggregate compensation of all employees in 1926 amounted to \$2,990,000,000, an increase of more than \$90,000,000 over the total railroad pay-roll for 1925. Average annual compensation increased from \$1,656 for 1926 compared with \$1,639 in 1925. The average pay of all classes of railroad labor paid upon an hourly basis increased from 62.4¢ per hour in 1925 to 62.8¢ in 1926. The average monthly number of employees fell below the 1926 figures in 1927, reflecting the decreases in traffic. Wage increases to certain groups, however, prevented the corresponding fall in the amount of monthly pay-roll payments.

REVENUES

Decrease in 1927.—The operating revenues of Class I railroads for the first nine months of 1927 showed a decrease in every item of railway operating income compared with 1926, accounted for by decreases in the volume of freight, passenger, mail and express traffic, by certain reductions in freight and passenger charges and decreases in other items of operating revenues. The railway operating revenues from all sources amounted to \$4,654,873,474 for the first nine months of 1927 as compared with \$4,764,635,483. Operating expenses also decreased from \$3,500,006,045 for the first nine months of 1926 to \$3,472,756,319 for 1927. Total operating revenues amounted to nearly \$6,383,000,000 for the full calendar year 1926.

Freight and Passenger.—Revenues from freight traffic were lower by \$54,291,015 for the first nine months of 1927 than for the same months of

preceding year:—\$3,529,483,037 in 1926 and \$3,475,192,022 in 1927. Passenger revenues, including sleeping and parlor car surcharges, fell from \$794,659,217 in 1926 to \$748,267,676 in 1927. Revenues from the mail service declined from \$70,449,491 to \$70,177,808. Express revenue was reduced from \$106,145,150 to \$102,587,980. Revenues from all other transportation sources were more than \$2,600,000 less;—\$157,226,430 in 1926 to \$154,665,683 in 1927. Incidental revenues, in 1926, amounted to \$100,337,235 and in 1927 \$97,391,806. General decreases of this sort in all items indicate a reduction of more than \$100,000,000 in railway operating income in 1927.

EXPENDITURES

The decreases in revenue are not offset entirely by reduction in railway operating expenses. Expenditures of Class I railroads for maintenance of way and structures increased from \$654,914,475, for the first nine months in 1926 to \$661,890,063 for the same period in 1927. Maintenance of equipment expenses decreased from \$964,128,474 in 1926 to \$924,539,513 in 1927. Traffic expenses rose from \$85,281,447 in 1926 to \$90,425,043 in 1927. Transportation costs fell nearly \$5,000,000 from \$1,626,490,835 to \$1,621,279,148 in 1927. Miscellaneous operating expenses changed but little, from \$42,509,605 in 1926 to \$42,491,050 in 1927, although general expenses increased from \$138,601,822 to \$144,161,396. The net revenue from railway operations for the first nine months of 1927 was more than \$82,500,000 less than for the same period of 1926,—\$1,182,117,155 in 1927 and \$1,264,629,438 in 1926. Total operating expenses amounted to \$4,715,000,000 in 1926.

Net Income.—Railway tax accruals were lower in the first nine months of 1927 than for the corresponding months in 1926,—\$288,364,848 in 1927 and \$292,386,982, and \$394,000,000 for the whole year, 1926. The net railway operating income for the first nine months of 1927 amounted to \$808,304,349 as compared with \$891,417,514 in 1926, indicating that the net railway operating income for

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the calendar year 1927 will be more than \$100,000,000 below the 1926 level of \$1,232,000,000. The railway operating ratio was 74.60% for the first nine months of 1927 as compared with 73.46% for 1926, and 73.10% for the calendar year 1926.

TRAFFIC

Density.—Reports for the first nine months of traffic indicate a lighter traffic in 1927 than in 1926. Complete figures are not available until months after the close of the year but the preliminary figures for the first nine months tend to show a loss of 1,000,000 revenue carloads below the 1926 level. Most of the difference is accounted for by reason of the falling off of export and domestic road traffic.

Passenger Traffic fell from 35,964,000,000 passenger miles in 1925 to 35,417,000,000 in 1926, a loss of one and one half per cent. The figures for 1927 so far compiled tend to show a still further decrease due in very great measure to the competition of private motor cars and passenger busses operating over an increased system of improved highways, and also to the great increase in foreign travel by American tourists. An interesting indication of the improvements in the safety of passenger transportation by railroad is the fact that only two passengers were killed in train accidents during the first six months of 1927.

Unit Receipts.—Receipts from transportation services, passenger and freight, per unit of service rendered fell a little more than 1.5% in 1926 as compared with 1925 and 15.2% as compared with the highest year following the war, 1921. Receipts per ton mile of freight hauled averaged 1.275¢ in 1921, the year following the horizontal rate increase of 1920. Passenger fares in that year averaged 3.086¢ per passenger mile. In 1925, the average receipts were 1.097¢ per ton-mile and 2.938¢ per passenger mile, while in 1926, these average figures fell to 1.071¢ and 2.937¢ respectively. The average receipts for the five-year period 1921-1925 were 1.149¢ per freight ton mile and 3.011¢ per passenger mile.

EXPENDITURES

Class I railroads have, since 1923, expended between \$750,000,000 and \$1,000,000,000 per year in improvement in plant and operation, an average annual outlay of nearly \$900,000,000. In 1926, \$885,000,000 were invested in locomotives, passenger-train cars, freight-train cars, equipment other than these classes, additional track, heavier rail, additional ballast, shops, engine houses and machinery, and other improvements.

Expenditures for improvements of these classes were lower for the first nine months of 1927 than for that period of 1926. An investment of \$570,215,000 was made between January 1 and September 30, 1927, while \$629,093,000 was invested in the corresponding period of 1926. The total capital outlay of Class I railroads for 1927 will probably amount to \$750,000,000,—about \$135,000,000 less than in 1926, a decrease of 15%. Class I railroads have invested nearly \$6,000,000,000 in improved facilities since 1920.

CHARACTER OF TRAFFIC

Distribution of commodity car loadings among the principal classes of traffic in 1926 showed decreases in grain and grain products, livestock, forest products, and merchandise in less than carload lots, while increases were recorded in the percentage of coal, coke and ore, compared with 1925 and 1924. The percentage of miscellaneous traffic increased in 1926 as compared with 1924 but was less than in 1925.

	1924 Per Cent	1925 Per Cent	1926 Per Cent
Grain and grain products	5.30	4.50	4.51
Livestock	3.61	3.19	3.01
Forest products	7.55	7.30	6.86
Merchandise, L.C.L.	25.80	25.75	25.24
Coal	17.59	17.39	18.62
Coke	1.07	1.22	1.30
Ore	3.46	3.93	4.10
Miscellaneous	35.62	36.72	36.36
	100.00	100.00	100.00

Net Freight.—Increases were made in net tons of freight per train in

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1926 over 1925;—744 tons in 1926 and 716 in 1925. A slight increase was made in the average load per car,—27.4 tons in 1926 and 27.0 in 1925. A new record was created in ton-miles per car in 1926, of 532 ton-miles per car day compared with 495 ton-miles in 1925. The average car loadings reached 27.3 tons the first nine months of 1927.

CONTROL OF PRODUCTION

By WILLIAM F. NOTZ

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OVER-PRODUCTION PROBLEM

Menace to Economic Stability.—During 1927, public attention concerned itself as never before with the problem of over-production in industry and means for its control. The reason for this is that the effects of war and post-war time speeding up of production and of expansion of plant capacity, greatly in excess of normal requirements, have become a real menace to our economic stability. Factors of an international character have helped to aggravate matters. Nationalistic aspirations, the endeavor to become independent of foreign sources of supplies, considerations of national defense, mass production,—have greatly accelerated world supply. On the other hand, decreased producing power of nations, unemployment and trade barriers of all kinds, have caused a heavy decline in world demand.

At its meeting at Geneva, in May, 1927, the International Economic Conference gave public expression to the fact that over-production has become an international problem of first magnitude. The customary methods of economic defense against the evils of over-production, viz., restriction of output and control of distribution, have been resorted to freely during the past year.

Cuban Sugar Defense Act.—As far as compulsory legal curtailment and control of production is concerned, the most outstanding instance is the Cuban Sugar Defense Law, which became effective on October 5, 1927. Its principal features are, first, the restriction of sugar output; second, limitation of sugar exports to the United States; third, creation of a sugar export corporation to handle

surplus not exported to the United States; and, fourth, the creation of a national sugar commission. It is hoped by this law, as stated by the President of Cuba, to insure greater stability to the Cuban sugar industry and at the same time to obtain for the producers more remunerative prices.

The new law marks the culmination of efforts initiated by the Cuban Government in May, 1926. At that time the Cuban Congress passed the so-called crop restriction law which authorized the President to fix the quantity of sugar cane to be grown. Restriction of production alone, did not, however, accomplish the end desired. Sugar constituted about 82% of the average value for the past three years of the total exports from Cuba, and the price obtained for sugar is the principal factor affecting the prosperity of that country.

INTERNATIONAL CARTELS

Steel and Aluminum.—Cases of voluntary concerted action to control production, by means of combines, syndicates, or cartel agreements, have been numerous during the past year in international trade. In September, 1927, two important combines completed the first year of their operation, viz., the European Steel Entente and the International Aluminum Cartel. The Steel Entente is composed of the steel producers of Belgium, France, Germany, Luxembourg, the Saar District, Czechoslovakia, Austria and Hungary. It provides for apportionment of production. To each member country a quota is allotted which is based on an estimated basic annual production of approximately 29,500,000 tons. A

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fine of \$4 is to be paid on each ton produced in excess of the quota.

The aluminum producers of France, Switzerland, Germany, and England, formed an international cartel in September, 1926, which sets aside for each member a market territory of its own, free from outside competition. As the domestic production in each of the member countries is closely centralized, production and distribution are readily controlled.

Rayon.—In February, 1927, the producers of artificial silk (rayon) in England, Germany and Italy, formed an international cartel with ramifications to all parts of the world. Negotiations have been going on for some time for the inclusion of the French producers also. Under this agreement, domestic markets are reserved for domestic industry, and under-selling in foreign markets is eliminated.

Swedish Match Combine represents a unique example of an international enterprise which controls a household article of popular mass consumption. The parent company of this combine is the Swedish Match Company, which through various holding companies controls about 150 match factories in 33 countries. This concern holds government concessions in a number of foreign countries, and it is estimated that it controls about 75% of the world's production of matches.

OVER-PRODUCTION AFFECTING UNITED STATES

In the United States the maladjustment due to over-production has become increasingly acute during 1927, particularly in certain lines of agriculture (cotton, tobacco, grain) and mining (coal, copper, zinc and oil). It has made itself felt seriously also in the manufacturing of textiles, automobiles, steel, artificial fertilizer, cement, sugar and other commodities.

AGRICULTURE

President Coolidge, in his message to Congress on December 6, 1927, said:

"Putting the government directly into business is merely a combination of subsidy

and price fixing, aggravated by political pressure. These expedients would lead logically to telling the farmer by law what and how he shall plant and where and how he should plant it, and what and how much he should sell and where he should sell it. The most effective means of dealing with surplus crops is to reduce the surplus acreage. While this can not be done by the individual farmer, it can be done through the organizations already in existence, through the information published by the Department of Agriculture, and especially through banks and others who supply credit refusing to finance an acreage manifestly too large. It is impossible to provide by law for an assured success and prosperity for all those who engage in farming. If acreage becomes over-extended, the government can not assume responsibility for it. The government can, however, assist crops and other organizations in marketing and handling a surplus clearly due to weather and seasonal conditions, in order to save the producers from preventable loss. While it is probably impossible to secure this result at a single step, and much will have to be worked out by trial and rejection, a beginning could be made by setting up a Federal board of commission of able and experienced men in marketing, granting equal advantages under this board to the various agricultural commodities and sections of the country, giving encouragement to the cooperative movement in agriculture, and providing a revolving loan fund at a moderate rate of interest for the necessary financing. Such legislation would lay the foundation for a permanent solution of the surplus problem."

Cotton.—The situation in 1926, when a surplus caused a sharp decline in price, prompted the President to appoint a committee to consider the problem. A plan was worked out for the formation of credit corporations, with an aggregate capital of \$16,000,000, and having capacity to borrow from the Federal intermediate credit banks a total of \$160,000,000, if necessary. They were to assist in financing the storage of the surplus for a period of 18 months or until it could be marketed in an orderly manner. According to the annual report of the Secretary of the Treasury, of June 30, 1927, this plan was a vital factor in stabilizing the market and preventing further demoralization in prices. It changed the psychology of the situation, stimulated freely advances by banks, encouraged the owners of cotton to slow up on selling and steadied conditions generally by providing time for the absorption and better handling of the crops by the normal agencies.

With regard to the cotton situation during 1927, the United States Sec-

retary of Agriculture says in his annual report for 1927:

"The farmers themselves, acting on the advice of Federal and State Departments of Agriculture, agricultural colleges, cooperative marketing agencies, effected much of the reduction voluntarily, thereby showing that intelligent action to readjust production to demand in agriculture is practicable on a large scale."

Reduced Acreage.—A commission appointed in 1926, by the Chamber of Commerce of the United States, to examine into the agricultural situation, in its report published in 1927, urges that a reduction of the acreage of cultivated land is desirable, by the conversion of marginal lands to improved pastures and the growth of timber. The commission disapproves of artificial remedies, such as the McNary-Haugen bill.

MINING

Coal.—Over-production in the bituminous coal industry is discussed by the United States Secretary of Labor, in his annual report for 1927, as follows: "The present deplorable conditions in the bituminous coal mining industry in this country, over-developed and over-manned as it is, unprofitable in the main part for most of the operators and furnishing but intermittent employment to the miners, could be improved by consolidation were it not for fear that indictments could lie under the anti-trust laws.

"With consolidation there would be ample competition. To bring order out of chaos, larger units of ownership or management may have to be formed, but only by this amalgamation of interested companies can the necessary central direction be effected, with output and employment stabilized, wages and prices steadied, and unprofitable workings closed.

"I trust that our industrial future may mark a sane revision of these restraining laws and that helpful and cooperative arrangements may be legalized."

Oil.—The problem in the petroleum industry has been under consideration since 1926 by the Federal Oil Conservation Board. In December, 1927, a committee composed of three members each from the oil industry,

the American Bar Association, and the Federal Government was appointed by the Secretary of the Interior to consider what legislation by the States, or by Congress, can be adopted for the preservation and conservation of the supply of petroleum.

LEGAL STATUS OF CONTROL

The present status of control of production under our anti-trust laws, as interpreted by the Supreme Court, is in substance this: that concerted action to curtail a substantial portion of the supply is contrary to public policy. The leading decisions of the Supreme Court on this point, covering particularly the activities of trade associations, are the *American Column and Lumber Company v. United States* (257 U. S. 337); *United States v. American Linseed Oil Ass'n.* (262 U. S. 371); *Coronado Coal Co., v. United Mine Workers of America* (268 U. S. 295); *Maple Flooring Mfrs. Ass'n. et al. v. United States* (268 U. S. 563); *Cement Mfrs. Protective Ass'n. et al v. United States* (268 U. S. 590).

COMBATING VALORIZATION

The various valorization schemes put into operation in foreign countries for the restriction of production and distribution of rubber, sisal, coffee, potash, and the consequent rise in price of these commodities to consumers in the United States have received further attention during the year, and various counter measures have been proposed. The latter include the refusal of loans to such countries and the amending of the Webb-Pomerene law, so as to permit the formation of combinations for the importation of raw materials.

An important decision dealing with one importing combine was rendered by the U. S. Supreme Court May 16, 1927. The court held that the defendants' object was to establish a complete monopoly of the importation and sale of sisal. The decision involved for the first time a construction of the anti-trust provisions of the Wilson Tariff Act, and made evident that any combination intended to restrain trade by importing articles from a foreign country and in-

CONTROL OF FOREIGN TRADE

creasing the market price within the United States would be violative of our anti-trust laws.

The Department of Justice also instituted proceedings in the Southern District of New York against the Franco-German Potash Syndicate for the purpose of preventing illegal restraints of the import trade of the United States. At the present time

there is a preliminary motion under advisement by the court seeking to have the action against the French Company dismissed upon the ground that the French Government owns eleven-fifteenths of the stock, and that therefore the company, as a governmental agency, is under the principles of international law immune from prosecution.

CONTROL OF FOREIGN TRADE

BY HENRY CHALMERS

CHIEF, DIVISION OF FOREIGN TARIFFS, DEPARTMENT OF COMMERCE

PLANS AND TRENDS

In the main 1927 was marked by a continued working out of the policies and tendencies in the control of foreign trade which have governed the actions of nations in recent years. However, the year has shown signs of planning for more stable and permanent conditions in international trade relations, and the emergence, through the various international conferences, of new and advanced principles in measures of trade control which, in time, are expected to find realization in a generally more favorable attitude toward international commerce.

The principal events in this field characterizing the year will be discussed separately for Europe, Latin America, the British Empire, and the Orient.

EUROPE

Tariff Revisions.—Ten of the twenty-six countries of continental Europe put into operation during 1927 more or less comprehensive revisions of their import tariffs, and a number of additional countries have initiated investigations looking to tariff revision within the next year or so. In the majority of cases the general direction of tariff revision has been distinctly upward, evincing the continued strength of the motive of protection to established or new domestic industries. Increased attention has been given to the tariff needs of agricultural producers. In addition to protective duties, the ef-

forts during the past year to aid domestic producers took the form in a number of European countries of reductions or waivers of import duty on industrial machinery or materials, assurance of exemptions from local taxation, or other special privileges. In only a few cases have the tariff changes been downward, and then limited to selected commodities.

Commercial Treaties.—To a certain extent the initial increases in duties were later moderated through the negotiation of commercial treaties between different European countries, the majority of which involved material concessions in duties on the part of one or both contracting parties. Practically all of the commercial treaties concluded during the year, with the exception of those to which France was a party, also carried an exchange of assurances that each country would treat the commerce of the other as well as that of the most favored nation. The return of the nations to an almost general acceptance of the most-favored-nation principle, as the proper governor of trade relations, whether with or without exchange of particular tariff concessions, has had the effect of generalizing fairly widely the reductions established in connection with individual treaties, so that the great bulk of the trade actually moves on the basis of the conventional rather than the original general duties.

Trade Restrictions.—Evidence of

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growing stabilization is afforded by the fact that, with nine countries of Europe making material changes during the year in their systems of restrictions upon exports or imports, the majority of the changes have been distinctly in the direction of moderation of the restrictions formerly imposed. Even more gratifying progress in this direction was made at the International Conference held at Geneva in October, which resulted in a multilateral convention, whereby the contracting parties agreed to the abolition of import and export restrictions within six months after the convention should come into effect, with exception only for restrictions of a sanitary or similar character, which are generally recognized, and certain special restrictions which various countries are permitted to maintain temporarily. While this convention was international in scope, the participants and signers including a number of countries outside of Europe, the effect of the agreement will be felt particularly in the countries of Europe, where the device of controlling trade by restrictions and licenses has been most commonly resorted to since the war.

LATIN AMERICA

Revision of Tariffs.—Twelve of the twenty republics of Latin America put into operation during 1927 complete tariff revisions or substantial changes in their import duties, with proposals for thoroughgoing revisions either being worked on or before the legislatures in five other countries. While the revisions took different forms in the various countries, the general direction of the tariff changes has been, with few exceptions, distinctly upward. Unlike the situation in Europe, however, the protective motive figured prominently in only two or three countries, the need for increased national revenue appearing as the dominant motive for the upward duty revisions in Latin America.

Consular Fees.—The dependence of Latin-American countries upon customs and similar collections for the greater part of their governmental revenue is further indicated by the

increase in the consular fees ordered by four of them during the past year. There has been much criticism of the substantial size of the fees required by various of these countries for the consular legalization of shipping documents. It is urged that such fees be recognized as a service charge rather than an additional duty, and either reduced in amount or collected at destination. This subject figures on the program for the Sixth Pan-American Conference opening at Havana in January, 1928.

Exemptions to Aid Industries.—Alongside of the general trend toward upward revision of duties on general merchandise, there has appeared in Latin America a growing tendency to reduce or remove duties on imports of machinery, industrial materials and, in some cases, foodstuffs, for the purpose of encouraging the economic development of the country or keeping down living costs. The negotiation of commercial treaties has been much less common than among the countries of Europe. Most republics of the American Continent maintain but single schedules of duties, and do not follow the European practice of negotiating for reductions in each other's duties. Such treaties as have been concluded by Latin-American countries during the past year have been mainly with their European connections, and practically always of a simple most-favored-nation type.

BRITISH EMPIRE

Extending Protection.—The strong motive toward protection of domestic industries evidenced in Europe and some Latin-American countries has also been noticeable in the British areas during 1927. Great Britain has added several products to her dutiable list under the "Safeguarding of Industries scheme," while several of the British areas,—notably Australia and New Zealand,—effected broad revisions of their tariffs, generally upward.

Closer Intra-Empire Relations.—More distinctive have been the efforts to tie the various parts of the British Empire into closer trade relations through new or increased preferences in the duties on each other's prod-

ucts. A notable instance of this type during 1927 was the bringing into operation of tariff concessions exchanged between Canada and the British West Indies by their Agreement of 1925.

The British areas illustrate most markedly the growing tendency toward the establishment of tariff commissions or similar bodies for the consistent study of a country's tariff needs and problems, and of regularly making any legislative action dependent upon the report of such investigating body.

THE ORIENT

Tariff Autonomy.—The most significant general development in international trade control in the Orient during 1927 has been the series of bold steps on the part of Persia, Siam, and China to throw off the limitations hitherto imposed by the Powers upon their national tariff autonomy. That system of control upon the tariff policy of less developed areas appears to be definitely on the wane. Turkey, which had long been under the capitulations régime, had asserted its tariff autonomy in 1921, following the victorious campaigns of its Nationalist leaders.

Persia denounced during the year its existing commercial treaties with the various Powers, which had been based on the capitulations régime similar to that of Turkey. This action was tantamount to general notice that Persia, too, meant to assume autonomous control of its tariff policy. Already Persia has a number of new treaties, built on a reciprocal basis, under negotiation.

Siam completed, in 1927, the series of treaties with various of the Powers whereby general consent was secured for the recognition of the tariff autonomy of that country, and put into effect its first national customs tariff.

China.—Although the control of China has been divided among the various contending groups, the keen desire for the termination of the so-called "unequal treaties" and the attainment of tariff autonomy has been a cardinal feature of the program of all the factions. Only the protests

from many directions prevented the actual enforcement of the entirely new autonomous tariff, announced by the Nanking Nationalist authorities, with a scale of duties ranging up to 57½ per cent. There are, however, being enforced practically throughout China the ordinary and luxury surtaxes contemplated by the Washington Conference of 1922, which were to have been imposed only after agreement with the Powers, but which the Peking Government on its own authority ordered to be collected early in 1927. In addition, the local authorities in a number of provinces or regions are levying special surtaxes of varying amounts.

TARIFF RAPPROCHEMENT

Latvia-Estonia Customs Union.—The year was marked by steps toward tariff and, to some extent, general economic rapprochement between several groups of neighboring countries standing in close economic relation to each other. The movement for a customs union between Latvia and Estonia, both formerly part of the Russian Empire, culminated in an agreement, ratified by both countries during 1927, which contemplates the co-ordination of their customs tariffs within the year, and of their internal taxes, railway tariffs and banking policies within three years, when the proposed customs union is actually to come into effect.

Franco-German Treaty.—The final conclusion of the commercial treaty between France and Germany, after negotiations of over two years, is regarded as a most important step toward the mutually beneficial adjustment of the economic interests and trade relations of the two principal contending countries in the late war. For the five years prior to 1925, Germany was required under the Peace Treaty to accord most-favored-nation treatment to all the Allies, without any corresponding obligations on their part; France imposed on German products during that period duties several times as high as those levied on products from more favored sources. The Franco-German Commercial Treaty of 1927 ushers in a régime of a decidedly

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more mutually advantageous character. After an exchange of reciprocal duty concessions, the Germans from their current tariff and the French from their proposed new tariff, each country granted to the principal export products of the other practically the most favorable duties of its tariff, with a condition of complete, unconditional most-favored-nation treatment between them to be achieved by December, 1928.

Austrian Succession States.—Among the Austrian Succession States, where the need has been keenly felt for less obstructive trade policies between what had for years formed parts of a single economic area, the year marked progress. The various schemes for a Danubian Confederation are coming to be recognized, under the present state of Nationalist sentiments, as a possible ideal rather than a practical objective. Adjustment of relations has rather been sought through the negotiation of carefully worked out commercial treaties between various sets of these states, embodying reciprocal moderations of the present duties and trade restrictions on commodities of particular interest to each other, so as to allow easier trading relations between the producing and consuming elements in each other's territories.

INTERNATIONAL CONFERENCES

Open Discussions.—The year was notable for its good resolutions on the part of the nations in the matter of control of foreign trade. It was marked by a number of international conferences where various problems in the regulation of commerce were subjected to fresh examination, and from which emerged a series of principles and standards which it was agreed should govern the nations in their policies and practices. These conferences were notable not only as occasions for a discussion of problems and overhauling of standards with a thoroughness never before shown, but also for the concrete manifestation of the growing recognition that the prosperity and general welfare of all countries would be advanced by the adoption of simpler and more liberal measures to govern the flow of

trade between them, and that there was much to be gained from common standards and practices.

Geneva and Stockholm.—Outstanding was the World Economic Conference, held at Geneva in May, under the auspices of the League of Nations, discussed elsewhere in this volume. This was followed by the Stockholm meeting of the International Chamber of Commerce where, with some modifications, the resolutions of the Geneva Conference received the endorsement of the representatives of the business world, who pledged themselves to efforts within their respective countries toward the realization of those standards.

Pan-American Commercial Conference.—There was convened at Washington the Third Pan-American Commercial Conference, made up of representative business men from the twenty-one American Republics. It gave prominent place on its program to the subject of barriers to inter-American trade, particularly the need for simpler and more uniform consular procedures and customs regulations. One of the concrete results of this Conference was the creation of the Pan-American Commission on Consular Procedure, made up of technically competent official representatives of the member Republics. At its sessions, held during October, there was developed a series of advanced standards with regard to the preparation and handling of shipping documents, and consular regulations and practices which, as they become built into the actual régime of the individual countries, are expected to mark considerable advance and appreciable relief from the present situation. The recommendations of this Commission on Consular Procedure now go before the Sixth International Conference of American States at Havana for endorsement by the plenipotentiary representatives of the member countries and final reference to the respective governments for action.

Geneva Diplomatic Conference.—One of the first fruits of the World Economic Conference, which was made up of unofficial representatives of the fifty countries participating—

PUBLIC REGULATION OF FUTURES TRADING

whose opinions were therefore not binding upon their governments—was the Diplomatic Conference held at Geneva in the Fall, made up of authorized governmental representatives, for the purpose of working out a convention for the abolition of import and export restrictions. This convention has already been signed by eighteen important countries. When it has been ratified by those

and any additional countries, an important step will have been taken toward the stabilization and liberalization of international trade, through the condemnation of restrictions and prohibitions as being regular devices of trade control, and through the removal of the great majority of restrictions which for some years past have handicapped the normal flow of trade.

PUBLIC REGULATION OF FUTURES TRADING

BY ARTHUR RICHMOND MARSH

MEMBER, NEW YORK COTTON EXCHANGE

GOVERNMENTAL ACTIVITIES

Little New Legislation.—Governmental activities directed to the regulation and control of the business done on the great futures markets for commodities in this country have been little in evidence during the past year. No new legislation of consequence in this field was enacted either by Congress or by the legislatures of the states; nor, in fact, was there any public demand for such legislation, unless movements in one or two Southern states for the abolition of statutes prohibiting or restricting trading in cotton futures contracts on exchanges may be so described.

Public Opinion of Exchanges.—Whatever public discussion of the great commodity exchanges has occurred during the year has been marked by an increasing understanding of the economic functions of these institutions and a fuller appreciation of their economic usefulness to producers, middlemen, manufacturers and consumers alike. It may fairly be said that there is now little evidence of the existence in any quarter of the opinion constantly expressed by large and influential groups a few years ago that operations on the exchanges produce effects highly adverse both to producers and to consumers of the commodities concerned, and that nothing short of the destruction of the exchanges themselves could remedy the evils attributable to them.

Utility of Exchanges.—Even the advocates of such agricultural relief measures as the McNary-Haugen Bill, as well as the leaders of the farmers' cooperative marketing movement, concede the necessity of the grain and cotton exchanges as instrumentalities for the orderly and efficient distribution of the principal farm products of the country. Hence there has been of late an almost complete cessation of the flood of projects of law designed to destroy or cripple the exchanges which was formerly a regular feature of the sessions of Congress and of many of the state legislatures; while proposals for the more rigid and minute regulation of the exchanges have become almost equally infrequent.

LAW ADMINISTRATION

Enforcement Policy.—As regards the administration of the existing regulatory laws, the responsible officers of government have clearly followed the policy of avoiding as far as possible direct interference with the affairs of the exchanges and of relying upon the exchanges' own governing bodies for the enforcement of the provisions of the statutes. This policy is undoubtedly—indeed, avowedly—the result of practical experience with this form of business regulation, which has demonstrated that the usefulness of the exchange is diminished almost in proportion to the extent of immediate governmental supervision and control of the trans-

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actions of those making use of the exchanges' facilities.

Less Minute Supervision.—To be economically effective trade upon the exchanges, as everywhere else, must remain essentially free in the sense that those engaging in it must be assured that their operations will not be subjected to the scrutiny and personal judgment of administrative officers of government, but will be assumed to be legitimate so long as they conform to the provisions of the law as interpreted by experienced persons in the trade itself. Consequently, the Federal authorities charged with the administration of the principal statutes regulating commodity exchanges in this country, —viz., the Grain Futures Act and the Cotton Futures Act,—have found it advisable to diminish rather than increase the minuteness of their supervision of transactions on the grain and cotton exchanges, leaving as far as possible upon the governing bodies of the exchanges themselves the responsibility for enforcing obedience to the respective statutes on the part of the members of the exchanges and their customers.

Chicago Board of Trade Incident.—The economic inadvisability of too direct and constant governmental supervision of operations on a great commodity exchange was excellently illustrated by an incident which occurred early in 1927 in connection with the administration of the Grain Futures Act on the Chicago Board of Trade. This incident, together with the circumstances which led up to it, may be briefly described as follows:

Soon after the constitutionality of the present Grain Futures Act was affirmed by the Supreme Court, the Grain Futures Administration, which represents the Secretary of Agriculture in the enforcement of the Act, seeking to carry out one of the principal ostensible objects of the law,—namely, to prevent unwarrantable movements of the prices of wheat, corn, oats, etc., by reason of alleged inordinate market operations on the part of large speculators, formulated a requirement that commission houses doing business on the Board of Trade

must report to it all transactions above a certain size, to the end that, if such transactions were deemed to be having an unduly depressing or enhancing effect upon the prices of the respective grains the parties thereto might be compelled to desist from further transactions or even to reduce their commitments to such proportions as the Grain Futures Administration might adjudge to be reasonable under the circumstances.

This general requirement remained in force until January 1, 1926, when it was made still more stringent by the additional provision that the commission houses must give in their reports the names of the customers for whom the transactions were made, as well as the exact size of their outstanding commitments on either side of the market from day to day, while it was further required that large traders operating through several commission houses should themselves make complete reports to the Grain Futures Administration of all their transactions. In this revised form the requirement remained in force until February, 1927. Its immediate effect was to cause almost all the larger traders in grain to withdraw from the market altogether, on the not unnatural ground that they did not propose to have their private business exposed to the prying eyes of governmental officials or to the possibility that these officials might by arbitrary action subject them to heavy losses.

Chicago Protest.—The inconveniences and even hazards of this state of affairs became apparent early in 1927, when the impending veto of the McNary-Haugen Bill by President Coolidge created much anxiety both in Chicago and in Washington lest the veto should induce a flood of selling of grain in a market in which no traders of large resources, wide commercial experience and tried business courage were willing to operate. Accordingly, the Business Conduct Committee of the Chicago Board of Trade drew up a petition to the Secretary of Agriculture asking that the objectionable rule be rescinded; and this petition the Secretary promptly granted. The result was

that the large traders quickly resumed their operations in the market, and the prices of the grains, instead of declining violently when the President's veto was announced, held steady and began to advance.

Effect on Future Regulation.—The demonstration afforded by the incident just described of the truth of experience that it is a condition precedent of efficient economic activity in any field that those engaged in that field be free from direct governmental interference with their private affairs, and that in the conduct of those affairs they be governed by laws and not men, seems likely to determine the manner of public regulation of the great commodity exchanges in the United States from this time onward. We shall probably see less and less inclination on the part of the governmental authorities to take cognizance of and to pass upon the propriety of the operations of individuals in these markets, and a constantly greater inclination to rely upon general rules acquiesced in by traders as a body and enforced by the traders' own organs of government. It is self-evident to those having economic knowledge and experience that this method will be much more conducive to the health of the exchanges and to their ability to fulfill their proper functions, than is the method of direct personal control of the activities of the exchanges by subordinate officers of the Government.

ANTI-TRUST VIOLATIONS

Effect On "Hedging."—When this is said, however, it is necessary to add that conditions will from time to time come about in connection with one or another of the great commodity exchanges which can only be rectified by the interposition of the Government itself to compel obedience to the laws of the land. Thus it is well known to those engaged in the cotton trade that for two or three years past the operations of certain large interests on the cotton exchanges have been in flagrant vio-

lation of the provisions of the Sherman Anti-Trust Act and other National and State anti-trust statutes, as those laws have been interpreted by the highest courts in relevant leading cases. The operations referred to have been designed to give the interests conducting them effective control over the movement of the prices of future contracts on the cotton exchanges, thereby assuring the interests a profit on their huge transactions in actual cotton at the expense of their competitors in the business. As a result, the "hedging" of the general run of cotton merchants—"hedging" which is the necessary basis of all present-day business in cotton—has been deprived of all its former dependability and has too often been transformed into a source of certain loss to the merchants relying upon it, instead of the protection against loss which in theory and in equity it should be.

Government Aid Necessary.—It is scarcely necessary to say that when the machinery and facilities of the cotton exchanges—or of any other exchanges under similar circumstances—are thus abused in violation of law it is the duty of the Government to intervene for the purpose both of punishing the offenders and of restoring normal and economically healthful conditions in the cotton futures markets, without the use of which no cotton merchant can hope long to survive. Nor is this an evil which the cotton exchanges themselves have the power to correct, since the enforcement of the general laws of the land is clearly beyond their province. The Government alone can undertake this task, which far transcends in importance any petty regulation of the details of the activities of the exchanges. It is sincerely to be hoped that the next important chapter in the history of public regulation of commodity markets in the United States will recount the steps taken by the Government to compel obedience to our anti-trust statutes by all persons operating on the great cotton exchanges.

BLUE SKY LAWS AND PROTECTION OF SECURITIES

BY WILLIAM R. SHANDS

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FEDERAL LEGISLATION

The task of trying to reduce the tremendous losses taking place each year through securities frauds is one now being assumed by numerous agencies. The work being carried on by them can be referred to but briefly in an article of this nature.

Control of Securities Sales.—Although many attempts have been made in recent years to enact a Federal statute to control the sale of securities, they have resulted in failure, leaving the chief protection afforded by the Federal Government as being that derived from its law forbidding the use of the mails to perpetuate frauds. The agitation stirred up by various parties desiring further Federal legislation has served to call attention to the limits of this statute, as well as to the limited number of persons available to make the required investigations as to matters probably coming within the scope of such act.

The Denison Bill (H. R. 52, 69th Congress, First Session) which had the support of the National Association of Securities Commissioners and which looked at one time as if it would be enacted by Congress, probably could not muster at this time the strength shown by it previously. Public opinion is decidedly unsettled at present as to whether further Federal legislation is necessary, and if it is, as to what form such legislation should take.

STATE LEGISLATION

Blue Sky Laws.—Almost all of the states have, on the other hand, considered they should afford some form of protection to their citizens along these lines, and accordingly have adopted fraud laws, or Blue Sky Laws to take care of the situation. The Martin Act of New York is one of the outstanding examples of the fraud laws being used at this time. The great majority of the states have followed the leadership of Kansas and

enacted Blue Sky Laws, the purpose of such acts being to require the submission of certain facts to state officials before securities may be offered for sale. Since all legislation of this nature is more or less new, it is found that numerous changes are constantly being made by the states in their endeavor to remove fraudulent securities and fraudulent securities dealers from their midst.

South Dakota has passed an entirely new law, effective July 1, 1927, modeled very closely on that of Minnesota passed in 1925, which statute resembles in many important provisions those now in force in Utah, Indiana, Kentucky and West Virginia. The law of Minnesota must be proving very effective, otherwise it may be assumed South Dakota would not have chosen it as a model.

New York and New Jersey.—The Martin Law of New York State as amended and enforced by the Attorney General of that state has been steadily growing in the esteem of the people. With this law as a guide the state of New Jersey is entering upon an enforcement of its new Securities Fraud Act which became effective July 4, 1927. The Attorney General of New Jersey is designated to enforce its provisions and is given power to appoint and employ such assistants as he may deem necessary.

North Carolina has also completely rewritten its former statute making many important changes, probably the most important of them being to reduce considerably the registration fee, to liberalize the amount of expense that may be incurred in the sale of securities, and to provide for the registration by notification of a restricted group of securities.

Outlook for Uniform Laws.—The state laws are still far from uniform, though there is considerable satisfaction to be derived from the recent action of North Carolina and South Dakota by those persons desiring the enactment of a uniform Blue Sky Law

BLUE SKY LAWS AND PROTECTION OF SECURITIES

since the two acts show some similar features. The bill sponsored by certain of the securities dealers has met with favor in a number of our states. Soon there may come a uniform bill from another source, as it is known that a committee of the Commissioners on Uniform Laws among the states has been studying Blue Sky legislation for some time with the view of drafting a uniform law on the subject. If a satisfactory law of this type can be drafted, it should result in material benefits to the investing public, and to dealers in securities which are now distributed to a national market.

STOCK EXCHANGES

Listing Requirements.—Among other agencies engaged in the work of protecting purchasers of securities we find the various stock exchanges of the country. Since the purpose of these exchanges is to provide a place where securities may be freely dealt in, it has been found necessary to supervise all securities admitted to trading in their market. These requirements, usually referred to as "listing requirements," provide for the submission of certain material information to the exchanges which is carefully scrutinized in order to determine whether the security proposed is a proper one to be listed for trading. The exchanges are, therefore, constantly engaged in finding security frauds.

The New York Stock Exchange has extended its activities in the field beyond merely its members and the securities listed by it and has established a Fraud Bureau to which the public may present complaints concerning fraudulent promotions and other security swindles. This Fraud Bureau works in close cooperation with the National Better Business Bureau, which will be referred to hereafter, and in conjunction with other fraud-fighting groups and organizations.

NEWSPAPERS AND MAGAZINES

Publicity Obligations.—The newspapers have realized that they have a burden to be borne in this fight against securities frauds. Since they

furnish a medium for distributing information to the public, the publicity given by them as to prosecutions concerning security frauds serves not only to enlighten their readers as to such matters, but also to deter other unscrupulous persons who would attempt to swindle the public through fraudulent schemes of one kind or another. The enforcing officials have found the assistance rendered by the newspapers most beneficial in this respect.

Advertising Scrutiny.—The newspapers have also realized that they should not allow their advertising columns to be used to defraud their readers. This has resulted in a scrutiny of all advertising matter presented to the papers in an effort on behalf of the newspapers to eliminate all such matter tainted in any way with fraud. While such action apparently decreases the income from advertising derived by the papers because of the material refused, it is believed such a policy actually produces more revenue in the end by establishing greater confidence on the part of the readers in the advertisements that are published. In so far as has been ascertained such action has been dictated by the individual papers rather than through any national organization. The movement, however, is general among most of the newspapers in this country.

Magazines.—Along with the newspapers might also be mentioned many of our magazines which likewise scrutinize their financial advertising and from time to time carry warnings to those who would get rich overnight.

BETTER BUSINESS BUREAUS

Purposes.—Business has realized that the protection of investors and consumers cannot be thrown entirely upon the law and its administrators, and has accordingly accepted its share of the responsibility through the various Better Business Bureaus scattered throughout the country. The objects of the Better Business Bureaus are the furtherance and promotion of honesty, accuracy and dependability in the manufacture and distribution of all commodities and

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in the marketing of financial paper: it is committed by American business to the encouragement of fair competition and to the up-building of public confidence in advertising, salesmanship, and business methods and practices.

Activities.—It is understood that the first Bureau organized was that in Minneapolis which started operations in March, 1914. The activity of these Bureaus has grown to such an extent since then that the annual expenditure for the work done by all Better Business Bureaus in 1926 amounted to more than \$800,000. There are now forty-three Better Business Bureaus, one of them being the National Better Business Bureau with headquarters in New York City and the other forty-two being local Bureaus located in cities throughout the United States. Each of these Bureaus is financed within its own locality by men and organizations that have realized their responsibility in these matters.

The Better Business Bureaus have built up their work in the financial field around the simple slogan, "Before you invest, investigate," and have accepted as their function the furnishing of facts on specific companies and investment fields to the best of their ability. This has been

done without cost to the inquirer. They have also made available very valuable information to the enforcement authorities and in addition co-operated in every way possible with the many other agencies taking part in this fraud work. The Better Business Bureaus have been able to assist the victims of security swindling to bring their cases to the attention of all fraud-fighting agencies in the country and they have assisted in mobilizing all the public and private influences, which these Bureaus command, to search out and punish the swindlers. These organizations have done much towards unifying the various efforts of others engaged in this work of protection for the public.

Conclusion.—Security losses have not yet been eliminated, but with so many agencies engaged in the work of fighting securities frauds and in protecting the interests of the investing public it is reasonable to believe that securities losses through fraud are tremendously reduced from what they would be without such activities being carried on. Speculation will continue, but the public is being gradually enlightened on the difference between a speculation and an investment, and thereby taught to put the knowledge gained into practical use in its purchases.

NATIONAL AND STATE BANKS

BY GURDEN EDWARDS

AMERICAN BANKERS ASSOCIATION

BANKING AND RESOURCES

Banks and Assets.—The 27,061 banks of all kinds in the United States on June 30, 1927, had aggregate resources of \$68,133,000,000. This was a drop of 985 banks as compared with the number in 1926, but a rise of \$3,239,000,000 in respect to resources. Total capital, surplus and undivided profits of the banks in 1927 amounted to \$8,272,000,000, a rise of \$464,000,000, and deposits were \$56,736,000,000, an advance for the year of \$2,679,000,000 for this item. There were 7,796 national banks and 18,798 state chartered

banking institutions, of which latter 15,690 were commercial banks, 1,647 trust companies and 1,461 were savings banks. Outside these numbers there were 467 private banks.

Consolidation of banks into larger units continued to be an outstanding development in banking during 1927. This movement resulted in giving the country larger and stronger banking units on the average, and was general throughout the nation. Another noteworthy feature was the continued spread among commercial banks of savings and trust departments, a movement tending to blur out the

sharp demarcations dividing banks into functional classes of commercial, savings and fiduciary institutions. This movement reflected the progressive ability and desire among the people of the United States to earn, save, invest and create estates, and therefore to require full services of their bank.

Savings Banking.—Data compiled by the Savings Bank Division, American Bankers Association, revealed increased participation in savings banking on the part of banking institutions other than mutual savings banks. It showed total savings deposits in banks of all kinds on June 30, 1927, of \$26,091,000,000, an increase in a year of \$1,368,000,000. Of the total only \$9,520,000,000 was in stock and mutual savings banks while \$16,571,000,000, or over 63 per cent, was in the commercial and fiduciary banking institutions.

Commercial Credit.—A conspicuous feature of banking operations as a whole in 1927 was the expansion of commercial bank credit, not by loans to industry, agriculture and commerce which as a group tended to contract, but by the application of bank funds to finance speculative activities in the stock markets and to investments. This expansion of credit was accentuated in the last quarter of the year by the export of over \$250,000,000 of gold, substantially reducing the country's reserves and necessitating the prompt and extensive substitution of Federal Reserve Bank credit. The smooth working and adequate power of this reserve mechanism to meet such a situation was thereby given a successful test.

THE AMERICAN BANKERS ASSOCIATION

Houston Convention.—This national organization of banking, with a membership of over 21,000 banks, including over 90 per cent of the nation's banking power, held at Houston, Tex., in 1927 its fifty-third annual convention at which the leading discussion related to the causes and remedies of bank failures. It was shown that in six years over 3,800 banks had suspended. A major cause

was found to be an excessive number of banks with insufficient capital. It was recommended that increased minimum capital, limitation of new charters to the needs of communities for added banking facilities, stricter enforcement of existing laws, closer government supervision and further organization of clearing house examination systems be sought as remedies.

Educational Foundation.—The Association completed its \$500,000 Educational Foundation, established in 1925 to further banking and financial scholarships and research in colleges in commemoration of its Golden Anniversary.

Officers.—The general officers of the Association elected for 1927-28 were, President, Thomas R. Preston, President Hamilton National Bank, Chattanooga, Tennessee; First Vice-President, Craig B. Hazlewood, Vice-President Union Trust Company, Chicago; Second Vice-President, John G. Lonsdale, President National Bank of Commerce, St. Louis; W. D. Longyear, Vice-President Security Trust and Savings Bank, Los Angeles; Executive Manager, F. N. Shepherd, American Bankers Association, New York City.

NATIONAL BANKS

Number and Assets.—Treating in detail the commercial banks of the country operating under state or Federal charter,—the National Banking System reflected strongly the tendency toward fewer and larger units. Between June 30, 1926, and June 30, 1927, the number of national banks shrunk from 7,978 to 7,796. This loss to the National Bank System of 182 members was attributable to consolidations, absorptions and failures. While the system lost in numbers it gained in the aggregate assets of its members. In June, 1926, total national bank assets amounted to \$25,316,000,000 while in June, 1927, they were \$26,582,000,000, a gain of \$1,266,000,000. Thus while numbers decreased by over two per cent, resources increased by more than five per cent. The following figures show the detailed changes which occurred in national banking in the year June 30, 1926, to June 30, 1927:

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CONDITION OF THE NATIONAL BANKS

(In thousands of dollars)

Resources	1926	1927
Loans and Discounts	\$13,417,674	\$13,955,696
Overdrafts	9,719	9,788
Investments	5,842,253	6,393,218
Banking House	632,842	680,218
Other Real Estate....	115,869	115,817
Due from Banks....	1,982,848	1,967,950
Reserve with Federal Reserve Banks ...	1,381,171	1,406,052
Checks and Cash Items	166,495	191,054
Exchanges for Clearing house	899,901	947,946
Cash on Hand.....	359,951	364,204
Other Resources ...	506,901	550,000
Total Resources ..	\$25,315,624	\$26,581,943
Liabilities	1926	1927
Capital Paid	\$ 1,412,872	\$ 1,474,173
Surplus	1,198,899	1,256,945
Undivided Profits ..	477,587	508,421
Reserve for Taxes, Interest, etc.....	64,618	70,326
Circulation	651,155	650,946
Due to Banks.....	2,899,456	2,856,937
Certified and Cashiers' Checks	505,792	538,990
Individual Demand Deposits	10,006,836	10,923,729
Individual Time Deposits	7,085,576	7,315,624
United States Deposits	144,504	139,843
Notes and Bills Rediscounted	268,801	120,024
Bills Payable	253,807	248,018
Other Liabilities ...	345,721	477,967
Total Liabilities..	\$25,315,624	\$26,581,943

These data show an expansion of \$538,000,000 in loans and discounts, or 4 per cent, whereas the lesser figure of investments expanded by \$551,000,000 or by nearly 10 per cent. Investments, therefore, were the major source of the increase in national bank assets in 1927. In respect to deposits, demand deposits grew by \$917,000,000 or 9 per cent, and time deposits by \$230,000,000, or about 3 per cent. Capital funds in the year increased by \$149,000,000 of which \$61,000,000 was in the item capital paid in, \$58,000,000 in surplus and \$30,000,00 in undivided profits.

McFadden Law.—The most important development in the national bank field during the year 1927 was the beneficial effects resulting from the McFadden bill modernizing the Federal statutes applying to national

banks and placing them on a competitive level with state commercial banks. It had been feared that the national bank system, which makes up the chief fabric of the Federal Reserve System, was disintegrating through the conversion of national banks into state banks on account of more liberal charter provisions offered to the latter. The experience of 1927 indicated that the transfer of national banking assets to state banking had been stopped and the losses of the three preceding years more than made up. The McFadden bill also defined and limited branch banking in the Federal Reserve System. Subsequent to its passage 127 new city branches of national banks as allowed by the law were established, 202 offices, previously authorized, were converted into full branches under the law and 400 other branches came into the system through consolidations and conversions of state banks. Thus of 729 branches new to the national bank system, only 127 were actually brought into existence under the McFadden bill since the others were already in operation under different auspices.

Trust Powers.—It was announced that 30 per cent of the national banks were exercising trust powers in 1927, with individual trust assets in excess of a billion dollars, and corporate trusts of two and a half billion. National banks obtained the right to exercise trust powers to the number of over 200 during 1927.

Savings deposits in national banks on June 30, 1927, were \$5,876,000,000, an increase in a year of \$913,000,000; 4,600 of these banks had separate savings departments and their savings depositors numbered 14,340,687, a reported growth of 1,767,686 in the year.

New Charters.—In the year 129 new national bank charters were granted, 50 associations were consolidated into 25, there were 165 voluntary liquidations and 135 failures.

STATE COMMERCIAL BANKS

Number and Resources.—State chartered commercial banks unlike the national commercial banks not

NATIONAL AND STATE BANKS

only grew fewer in numbers but also smaller in aggregate resources during the year under consideration. Between June 30, 1926, and June 30, 1927, the number of state commercial banks shrunk from 16,493 to 15,690. This loss of 803 members was attributable to consolidations, conversions into national banks and failures. At the same time aggregate assets in this class of banks fell from \$16,580,000,000 in June, 1926, to \$16,565,000,000 in June, 1927, a loss of \$15,000,000.

CONDITION OF THE STATE COMMERCIAL BANKS

(In thousands of dollars)

Resources	1926	1927
Loans and Discounts	\$ 9,703,248	\$ 9,534,915
Overdrafts	35,487	29,292
Investments	3,220,400	3,391,212
Banking House	454,801	462,665
Other Real Estate	152,115	152,416
Due from Banks	1,045,705	1,101,279
Reserve with Federal Reserve Banks	777,430	698,063
Checks and Cash Items	261,547	282,338
Exchanges for Clearing house	161,625	121,967
Cash on Hand	405,372	413,739
Other Resources	361,926	377,102
Total Resources	\$16,579,656	\$16,564,988
Liabilities	1926	1927
Capital Paid	\$ 1,092,424	\$ 1,078,087
Surplus	696,901	735,949
Undivided Profits	254,767	270,096
Due to Banks	566,536	614,807
Certified and Cashiers' Checks	97,927	195,514
Individual Demand Deposits	5,765,591	6,496,575
Individual Time Deposits	5,757,136	6,111,005
Individual Deposits not classified	1,635,348	329,010
United States Deposits	10,299	5,085
Notes and Bills Rediscounted	68,538	53,360
Bills Payable	247,666	214,535
Other Liabilities	386,523	460,965
Total Liabilities	\$16,579,656	\$16,564,988

The above figures show the detailed

changes which occurred in the state commercial banks in the year June 30, 1926, to June 30, 1927.

These data show a contraction of \$168,000,000 in loans and discounts or a drop of almost 2% in this item, but on the other hand investments expanded by \$171,000,000 or over 5%. A loss in loans and discounts, therefore, was the major source of the shrinkage in state commercial bank assets in 1927. It is to be noted that in both classes of these commercial banks, that is the state and Federal chartered institutions, there was a conspicuous increase in investments as compared with loans and discounts. In respect to deposits in the state banks, individual demand deposits grew by \$731,000,000 or more than 12½%, while individual time deposits grew by \$354,000,000 or about 6%. Capital paid in of the state commercial banks decreased in the year by \$14,000,000, but surplus increased by \$39,000,000, and undivided profits by \$15,000,000, so that there was a net expansion in capital funds of about \$40,000,000.

Savings and Trust Activities.—As in the case of the national banks, there was a prevalent growth of departmental savings and trust activities among the state commercial banks. Savings deposits or deposits in savings departments of the state commercial banks expanded from \$4,294,000,000 on June 30, 1926, to \$6,091,000,000 on the corresponding date for 1927. This was a growth in deposits so classified of \$1,797,000,000 or over 41%. The growth also of trust departments among state commercial banks, as in the case of national banks, reflected the spreading popular demand for complete banking services from a bank, including the handling of business and personal checking accounts, savings funds, investments and post-mortem financial management.

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THE FEDERAL RESERVE SYSTEM

By W. RANDOLPH BURGESS

FEDERAL RESERVE BANK, NEW YORK

LEGISLATION

Rechartering.—A much discussed issue was settled during 1927 in the passage by Congress of a bill providing that the charters of the Federal Reserve Banks should be indeterminate. The original Federal Reserve Act had provided that the charters of Reserve Banks should continue for 20 years. They would thus lapse in 1934, unless some legislation to the contrary were passed prior to that time. In view of the history of the First and Second Banks of the United States, the charters of which were both for 20-year periods and both of which had gone out of existence because of failure to secure a rechartering, there had been some apprehension as to the possibility of a similar fate for the Federal Reserve System in case political considerations had become involved in their continuance. A paragraph in the McFadden Bill, approved by the President on February 25, 1927, amended the Federal Reserve Act so that Federal Reserve Banks should "have succession after the approval of this Act until dissolved by Act of Congress or until forfeiture of franchise for violation of law." The passage of this bill removes the danger of possible business and financial unsettlement through discussions as to the rechartering of the Reserve Banks, and makes less likely violent changes in their general functions.

CREDIT POLICY

Discounts.—In general the policy of the Federal Reserve System in 1927 was an influence toward somewhat easier money conditions. Between the latter part of July and the early part of September all the Federal Reserve Banks reduced their discount rates from 4 to 3½ per cent. During the course of the year the Federal Reserve Banks also increased their holdings of Government securities by about 300 million dollars. These purchases had the effect of making funds

available to the member banks with which they reduced indebtedness at the Reserve Banks. As a result total bills discounted for member banks by the Reserve Banks declined during the year from about 600 million dollars to about 400 million dollars. Finding themselves relieved of indebtedness to this extent, the banks were in a position to lend money somewhat more freely and money rates declined by about ½ of 1 per cent from the levels prevailing a year previous. Some retirement of currency in circulation reflecting less active business and heavy gold imports in the early months of the year, were further factors making for easier money.

Effect of Easier Money.—It may be noted that the reduction of discount rates and purchases of securities by the Reserve Banks took place at a time when business was less active than for some months previous and likely to be benefited by easier money conditions. Another outstanding feature of the credit situation in this period was a tendency toward more stringent money conditions. The easier money position in the United States resulted in a movement of funds from this country abroad, both in the form of bond issues and short time lending, which operated toward relieving the stringency of money conditions abroad, placed European buyers in a better position to purchase American products, and reacted favorably upon the world's commodity markets.

GOLD MOVEMENTS

Changes in Gold Stock.—As has been suggested, a large import of gold early in the year was one of the influences making for easy money. The year was marked by a number of spectacular changes in the country's gold stock. In the first third of the year there were net gold imports of approximately 100 million dollars. In May and June it was announced that the Federal Reserve

THE FEDERAL RESERVE SYSTEM

System had purchased 62 million dollars of gold abroad, and it appeared probable that this purchase prevented the shipment of gold to the United States. This gold was later sold abroad. It was also announced in May that the Federal Reserve Banks had earmarked gold for a foreign correspondent, which accounted for a large decrease in the gold reserves of the Reserve Banks at that time.

Export Balance.—In September, following the reduction in discount rates and strengthening in a number of the foreign exchanges, the gold movement was reversed from an import to an export balance, and in September, October, and November there were considerable exports of gold and also some further amounts

of gold earmarked by the Reserve Banks. As a result of these various transactions, the country's gold stock toward the end of the year was smaller than at the beginning. It is also interesting to note that at the present time of writing the gold stock is less than at the end of 1924. Thus in the past three years there has been a net loss through gold movements.

During this period the United States has thus taken none of the world's new gold production and all has been available to go to other countries which have been in process of restoring monetary stability. The figures for gold exports, imports, and earmarking are shown for 1927 by months in the following table:

(In millions of dollars)

1927	Total Imports	Total Exports	Change Through Earmarkings	Net Change
January	59.4	14.9	+ 19.5	+ 64.0
February	22.3	2.4	+ 3.1	+ 23.0
March	16.4	5.6	— 1.5	+ 9.3
April	14.5	2.6	— 1.0	+ 10.9
May	34.2	2.5	— 95.0	— 63.3
June	14.6	1.8	— 0.5	+ 12.3
July	10.7	1.8	+ 0.2	+ 9.1
August	7.8	1.5	— 2.5	+ 3.8
September	12.9	24.4	— 9.0	— 20.5
October	2.1	10.7	— 25.0	— 33.6
November *	0.5	54.4	— 40.0	— 93.9
Total	195.4	122.6	—151.7	— 78.9

* Preliminary.

INTERNATIONAL COOPERATION

Bank of Poland.—During the year the Reserve System again participated in undertakings for international monetary stability. On October 17, the Federal Reserve Bank of New York announced that, in association with all other Federal Reserve Banks, it had participated in the credit arrangements granted by various banks of issue to the Bank of Poland, the Polish bank of issue, in furtherance of the plans which had been completed for the stabilization of the Polish currency. Under the terms of these arrangements the Federal Reserve Bank of New York agreed, if desired, to purchase from the Bank of Poland up to a total of five and a quarter million dollars of prime commercial bills. This credit

arrangement was somewhat similar to the arrangements made in previous years with the Bank of England, and with the National Bank of Belgium.

Bank of England.—In May the credit arrangement with the Bank of England, which had been concluded in May, 1925, expired without having been made use of by that institution; and in October, 1927, the arrangement with the National Bank of Belgium expired similarly without having been used. Undoubtedly, however, the existence of these credits as a possible resource was a substantial assurance of success in the stabilization programs of Great Britain and Belgium.

Conferences.—During the course of the year, Governor Montagu Norman of the Bank of England, President

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Hjalmar Schacht of The Reichsbank, Deputy Governor Charles A. Rist of the Bank of France, Governor Louis Franck of the National Bank of Belgium, and President G. Bachmann of the Swiss National Bank, were visitors in this country and discussed with Federal Reserve officials the problems of international monetary stability.

Of necessity the European monetary situation has as in previous years been one of the factors to be

considered in the formulation of the credit policy of the Reserve System because of the relationship which European financial conditions bear to finance, commerce, and agriculture in the United States.

CONDITION OF RESERVE BANKS

Changes.—The following table shows the changes in the principal items of condition of the Federal Reserve Banks between the end of November, 1926, and November, 1927:

PRINCIPAL RESOURCES AND LIABILITIES OF THE TWELVE FEDERAL RESERVE BANKS COMBINED

(In millions of dollars)

	November 24, 1926	November 23, 1927	Change
<i>Resources</i>			
Total Gold Reserves	2,830	2,860	+ 30
Bills Discounted	628	418	— 210
Bills bought in open market	341	327	— 14
U. S. Government securities	300	621	+ 321
Total bills and securities	1,271	1,367	+ 96
<i>Liabilities</i>			
F. R. notes in actual circulation	1,774	1,729	— 45
Member bank—reserve account	2,202	2,393	+ 191
Total deposits	2,262	2,436	+ 174
Capital paid in	124	132	+ 8
Surplus	220	229	+ 9
Ratio of total reserves to deposit and F. R. note liabilities combined ..	73.3%	71.9%	— 1.4%

Gold Reserves show a small increase due largely to a slightly smaller amount of gold certificates in circulation, which have been retired accompanying a general decrease in the demand for currency of about 75 millions as compared with the previous year, which is also reflected in the decrease of Federal Reserve notes in circulation.

Credit Extension.—The total amount of credit extended by the Reserve Banks, represented by total bills and securities, is slightly larger than a year ago, reflecting the calling into use of Federal Reserve credit to replace the bank reserves depleted by recent gold exports.

Member Bank Reserves.—The only other important change in the table is the increase in member bank reserves. Since the banks are required by law to maintain reserves in direct proportion to their deposits, this

increase in reserve balances of member banks reflects an increase in bank deposits. The related figures reported by member banks indicate that during the year there has been a growth in total bank credit of more than 2 billion dollars, a considerable part of which has gone into securities either in the form of increases in bank investments, or loans on stocks and bonds. There has been no increase in commercial loans. This growth of bank credit in turn reflects largely a growth in savings deposits in the banks, which have been employed in this form.

VOLUME OF OPERATIONS

Liberty Loan Refunding.—A striking feature of the operations of the Reserve Banks in 1927 has been the work performed by them as fiscal agents of the Government in redeeming Second Liberty Loan bonds. The

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first step toward the refunding of this issue was taken in March, when a 3½ per cent issue of Treasury notes was offered in exchange for bonds on a favorable basis. This was followed by exchange offers in June and September. By these several exchanges, and by purchases by the Treasury for the sinking fund, and from surplus money in the Treasury, the amount of bonds outstanding was reduced from \$3,100,000,000 in March to \$732,000,000 on November 15, the redemption date. During the second half of November more than \$550,000,000 were redeemed. In all these operations the Federal Reserve Banks acted as agents for the Treasury and handled in that connection a vast amount of mechanical detail. The highly successful refunding of this issue marks a still further important step in dealing with the war debt problem.

Other Operations.—The volume of Federal Reserve Bank operations in other lines continued to increase very much in accordance with the usual rate of growth, reflecting the increase in the country's population and the volume of business. In the case of the Federal Reserve Bank of New York, for example, the check collection operation, volume of mail handled, wire transfers, and similar phases of operations showed an average increase of about 4 per cent over the preceding year.

MEMBERSHIP CHANGES

Banks and Resources.—During the year ended June 30, 1927, there was a decrease of 276 in the number of member banks, due to mergers between member banks, bank liquidations, etc. In this period 172 new banks joined the System and 106 withdrew from the System, including withdrawals due to absorption of

member banks by non-member banks. On June 30, there were 9,099 member banks,—about one-third of the banks in the country, but with resources equivalent to about two-thirds of the country's total banking resources. While the number of member banks has declined slightly in recent years, the resources of member banks have grown steadily and now constitute a larger proportion of the resources of all banks in the country than ever before.

Personnel.—The following changes were made during the year in the Federal Reserve Board and in the principal positions in the Federal Reserve Banks:

D. R. Crissinger, resigned as governor of the Federal Reserve Board, September 15. He was succeeded by Roy A. Young, governor of the Minneapolis Federal Reserve Bank, October 4.

Gates W. McGarrah was appointed chairman of the board and Federal Reserve Agent of the Federal Reserve Bank of New York, assuming his duties May 1. Mr. McGarrah succeeded Pierre Jay, who resigned December 31, 1926, to accept an appointment as American Member of the Transfer Committee under the Dawes plan.

W. B. Geery, deputy governor of the Minneapolis Bank, was appointed governor of that bank to succeed Roy A. Young.

The following changes were made in the membership of the Federal Advisory Council:

Boston district: Arthur M. Heard, of the Amoskeag National Bank of Manchester, N. H., to succeed Charles A. Morss.

Cleveland district: Harris Creech, President, Cleveland Trust Company, Cleveland, Ohio, to succeed George A. Coulton.

OTHER BANKS AND TRUST COMPANIES

BY GURDEN EDWARDS

AMERICAN BANKERS ASSOCIATION

SAVINGS INSTITUTIONS

Stock Savings Banks.—There were 1,461 banking institutions in the

United States in 1927 reported as savings banks. Of these 843 were stock savings banks with total re-

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sources of about \$1,816,000,000 and with capital funds of \$133,700,000 on June 30, 1927. These figures represent a loss in numbers of 61 for this class of bank and a decrease of \$381,000,000 in point of total resources as compared with the corresponding date for 1926. Both the items of loans and discounts and of investments played large parts in the reduction in total stock savings bank resources. A similar shrinkage occurred in their capital funds, capital paid in dropping by over \$16,000,000 in the indicated year and surplus and undivided profits also suffering substantial reductions. The item of individual deposits declined in the year by almost \$360,000,000. The following figures show the detailed changes which occurred in the stock savings banks in the year June 30, 1926, to June 30, 1927:

CONDITION OF STOCK SAVINGS BANKS (In thousands of dollars)

Resources	1926	1927
Loans and discounts..	\$1,409,868	\$1,144,709
Overdrafts	306	263
Investments	504,098	419,803
Banking house	52,302	45,857
Other real estate.....	24,413	24,326
Due from banks.....	118,657	130,824
Reserve with Federal reserve bank	34,443	7,408
Checks and other cash items	12,045	13,067
Exchanges for clearing house	3,745	3,167
Cash on hand.....	26,916	23,692
Other resources	9,634	2,422
Total resources ...	\$2,196,427	\$1,815,538

Liabilities	1926	1927
Capital paid	\$ 85,153	\$ 69,144
Surplus	47,833	46,554
Undivided profits	20,217	18,030
Due to banks.....	8,959	11,334
Certified and cashiers' checks	502	451
Individual deposits ..	2,021,614	1,661,803
United States deposits Notes and bills redis- counted	1,911	1,401
Bills payable	3,375	2,270
Other liabilities	6,863	3,989
Total liabilities ...	\$2,196,427	\$1,815,538

Mutual Savings Banks.—Of the total savings institutions 618 were reported as mutual savings banks on

June 30, 1927, with aggregate resources of \$9,011,000,000. These figures represented a loss as to numbers of but two banks in the year since June 30, 1926, and an increase in resources in the period of \$589,000,000. The item of loans and discounts increased in this period by \$441,000,000 and of investments by \$117,000,000. The capital funds in this class of banks, represented by the items surplus and undivided profits, also expanded, standing at over \$930,000,000 in June, 1927, as compared with \$832,000,000 the year earlier, or an increase of \$88,000,000. A substantial rise in deposits of this class of bank was also recorded, this item standing on the 1927 date at \$8,077,000,000, a rise for the year of almost \$500,000,000. The following figures show the detailed changes which occurred in mutual savings banks in the year June 30, 1926, to June 30, 1927:

CONDITION OF MUTUAL SAVINGS BANKS (In thousands of dollars)

Resources	1926	1927
Loans and discounts..	\$4,623,594	\$5,064,595
Investments	3,406,104	3,523,350
Banking house	82,436	93,330
Other real estate.....	10,778	12,668
Due from banks.....	211,258	224,741
Checks and other cash items	1,364	1,094
Exchanges for clearing house	399	209
Cash on hand.....	29,600	31,212
Other resources	56,774	59,986
Total resources ...	\$8,422,307	\$9,011,185

Liabilities	1926	1927
Surplus	\$ 702,974	\$ 782,927
Undivided profits	128,875	137,332
Due to banks.....	99	108
Certified and cashiers' checks	20	44
Individual deposits ..	7,577,504	8,077,099
Bills payable	345	568
Other liabilities	12,490	13,107
Total liabilities ...	\$8,422,307	\$9,011,185

Savings Departments.—Savings banking activities, however, in the United States are not only comprised within the institutions specifically designated as savings banks. To find the full facts regarding savings de-

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posits in banks, it is necessary to go to the figures for all classes of banks as has been done by the Savings Bank Division of the American Bankers Association, which has estimated that 85% of all banks, including commercial banks and trust companies in this country, now operate savings departments. The figures compiled by the bankers association show that the total savings in banks in the United States on June 30, 1927, aggregated \$26,090,902,000, an increase of \$1,368,094,000 over the corresponding date of a year earlier.

W. Espey Albig, the compiler of these figures, in commenting on them pointed out that only about \$530,000,000 of this increase was composed of new money, the bulk being due to interest accretion on pre-existing sav-

ings balances, and that the rate of increase in the nominal savings account in the United States was somewhat below previous years, but that an analysis revealed that the banks are now being largely used merely as way stations for savings on their way to more lucrative investment instead of final repositories for a large volume of the American people's thrift funds. His figures showed a notable increase in savings depositors, the total number being reported at 48,354,784 in 36 states, an increase for the same territory over the year previous of 1,592,544. The following tables give a statistical picture of the savings banking situation in the United States in 1927 as compared with the immediately preceding years.

SAVINGS DEPOSITS IN CLASSIFIED BANKS

(In thousands of dollars)

Year	Mutual Savings	State Banks	Trust Companies	Private Banks	National Banks
1923.....	\$6,273,151	\$6,456,649	\$2,252,203	\$58,194	\$4,686,337
1924.....	6,693,247	6,789,872	2,501,244	46,365	5,158,006
1925.....	7,152,258	7,253,437	2,870,389	47,702	5,810,266
1926.....	7,525,189	7,674,880	3,270,494	47,899	6,177,730
1927.....	8,039,784	7,382,147	3,530,954	49,725	7,088,297

TOTAL DEPOSITS AND DEPOSITORS IN ALL BANKS

Year	Total Savings Deposits	Total Number Savings Depositors	U. S. Per Capita Savings Deposits
1923	\$19,726,534,000	35,878,758	\$178
1924	21,188,734,000	38,741,634	185
1925	23,134,052,000	43,850,127	204
1926	24,696,192,000	46,762,240	211
1927	26,090,902,000	48,354,784	220

SAVINGS DEPOSITORS IN CLASSIFIED BANKS

Class of Bank	No. of Savings Depositors
Mutual savings	11,189,978
State banks	16,132,898
Trust companies	6,575,061
Private banks	119,937
National banks	14,336,910
Total	48,354,784

School Savings Banking.—Another important phase of savings is school savings banking, developed under the leadership of the Savings Bank Division. It is a plan by which education in thrift can be carried on along with school hours and has been adopted widely throughout the country, with a vigorous tendency to increase, as shown in the following figures:

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SCHOOL SAVINGS IN THE UNITED STATES

Year	Number of Schools	Number of Enrolled Pupils	Number Participat- ing	Deposits	Interest Credited	Net Savings
1923-24.....	9,080	3,095,012	2,236,326	\$14,991,535.40	\$310,865.91	\$8,556,991.27
1924-25.....	10,163	3,848,632	2,869,497	16,961,560.72	458,072.81	7,779,992.55
1925-26.....	11,371	4,319,741	3,403,746	20,469,960.88	622,994.38	8,770,731.05
1926-27.....	12,678	4,658,156	3,815,785	23,703,436.80	793,218.09	9,464,178.93

Deposits are made by pupils in their classrooms on scheduled days. The funds are held in designated banks subject to control of the individual up to the amount of his credits.

TRUST COMPANIES

Growth.—The trust companies of the United States continued to register during 1927 the notable growth which has characterized this specialized type of financial institution during the last decade. Although during the year June, 1926, to June, 1927, the number of all classes of banks decreased in a rather marked degree, the trust companies showed an almost negligible loss in numbers. On June 30, 1927, there were 1,647 trust companies in the United States, only nine less than at the corresponding date of the year before, while they had a very marked increase in resources, which stood at \$13,995,000,000 a growth of about \$1,790,000,000, as compared with the year before.

The item of loans and discounts contributed an increase of over \$725,000,000 to this expansion of general assets, and investments an increase of more than \$692,000,000. All classes of capital funds of the trust companies also recorded notable enhancements, paid in capital aggregated \$745,647,000, an increase of almost \$73,000,000; surplus stood at \$932,337,000, an advance of over \$118,000,000, and undivided profits at \$195,617,000, which marked an increase of \$15,662,000 in this item. Total individual deposits in the trust companies stood at over \$10,094,000,000 in June, 1927, an increase of about \$1,194,000,000 in a year. The following figures show the detailed changes which occurred in the trust companies in the year June 30, 1926, to June 30, 1927:

CONDITION OF TRUST COMPANIES (In thousands of dollars)

Resources	1926	1927
Loans and discounts	\$ 6,754,087	\$ 7,479,570
Overdrafts	3,438	3,690
Investments	2,806,780	3,498,845
Banking house	265,819	294,212
Other real estate....	47,607	85,985
Due from banks....	463,113	520,555
Reserve with Federal reserve bank	730,494	818,225
Checks and other cash items	484,051	572,869
Exchanges for clear- ing house	45,708	46,845
Cash on hand.....	170,542	171,852
Other resources	433,557	502,108
Total resources ..	\$12,205,196	\$13,994,756
Liabilities	1926	1927
Capital paid	\$ 672,959	\$ 745,647
Surplus	814,250	932,337
Undivided profits ..	179,955	195,617
Due to banks.....	854,297	805,334
Certified and cash- iers' checks	51,180	384,632
Individual deposits..	8,900,928	10,094,485
United States de- posits	33,024	48,534
Notes and bills re- discounted	44,047	52,951
Bills payable	124,019	123,892
Other liabilities ...	530,537	611,327
Total liabilities..	\$12,205,196	\$13,994,756

The chief national unifying factor among the trust companies is the Trust Company Division, American Bankers Association. This organization reached its thirty-first year of activity in 1927. When it was organized there were only 242 trust companies with resources of but \$807,000,000. The Division represents the trust companies in a national way in respect to both Federal and state legislation affecting their business and that of their clients, and in regard to taxation bearing on banking resources, trustee funds and other property entrusted to their care and in many other capacities.

OTHER BANKS AND TRUST COMPANIES

PRIVATE BANKS

Number and Resources.—The private banks reporting to the public banking authorities in the United States during 1927 numbered 467 institutions, or a drop of 28 units in this class reporting during the year. The total resources also showed a decrease, amounting on June 30, 1927, to \$164,148,000, which was a shrinkage of more than \$10,000,000 as compared with their figures for the corresponding date in 1926. The loans and discounts were \$90,893,000, a decrease of \$1,666,000 in a year, while their total paid-in capital at \$9,447,000 recorded a reduction of \$448,000; their surplus at \$9,815,000 was \$1,296,000 less than the year previous and their undivided profits reported at \$1,710,000 were \$60,000 less. Thus the private banks' total capital funds of \$20,972,000 suffered a loss in a year of over \$1,800,000. The total deposits also were reduced, being \$124,353,000 which was nearly \$9,000,000 below the figure for the year previous.

FEDERAL LAND BANKS

Resources.—The resources of the twelve Federal land banks on September 30, 1927, stood at \$1,218,000,000 which was an increase of about \$79,500,000 as compared with the figure of the year previous, the principal assets of these Associations, consisting of mortgage loans, aggregating \$1,143,000,000, an expansion in the year of about \$86,000,000. Their capital stock rose by \$4,724,000 and stood on the given date at \$61,238,000. Their combined capital, reserves, surplus, and profits were \$75,649,000, an increase in the year of over \$6,000,000. The 83 joint-stock land banks on the same date had aggregated resources of \$653,318,000, a decrease in a year of \$18,608,000. Mortgage loans dropped from about \$615,000,000 to \$610,000,000, a loss of \$5,000,000. Paid-in capital stock decreased to \$4,856,000, a loss in this item in the year, of \$3,868,000. Total net worth of these Associations was \$52,832,000 as compared with \$56,668,000 the year earlier. The twelve Federal intermediate credit banks on September 30, 1927, had aggregate resources of \$110,293,000, a drop in a year of over \$13,000,000. Their direct loans dropped from about \$36,

000,000 to approximately \$18,000,000, or about half.

BANK FAILURES

Reports on failure of all classes of state and private banks for the year June 30, 1926, to June 30, 1927, showed that there was a total of 689 suspensions with aggregate liabilities of \$206,655,000. These figures recorded a marked increase over the preceding year, when there were 496 failures among these classes of banks with liabilities at \$147,823,000. In the year ending October 31, 1927, 135 national banks with aggregate capital of \$8,257,000 were placed in charge of receivers. This was an increase of 44 in respect to the number of failed national banks as compared with the preceding year.

CONDITION OF ALL BANKS

Summarizing the composite data for all banks in the United States, the number on June 30, 1927, was 27,061 as compared with 28,146 a year earlier. The following table gives a general survey of the changes in their financial statistics during this period:

CONDITION OF ALL BANKS IN THE UNITED STATES (In thousands of dollars)

Resources	1926	1927
Loans and discounts	\$36,233,490	\$37,270,378
Overdrafts	49,470	43,450
Investments	15,815,141	17,255,093
Real estate, furniture, etc.	1,851,967	1,979,578
Due from other banks and bankers	6,769,061	6,900,402
Checks and other cash items	2,037,561	2,181,167
Cash on hand	996,520	1,007,896
Other resources	1,140,152	1,494,594
Total resources ..	\$64,893,362	\$68,132,558

Liabilities	1926	1927
Capital stock paid in	\$ 3,273,303	\$ 3,376,498
Surplus fund	3,471,968	3,764,527
Undivided profits ..	1,063,171	1,131,206
Reserved for taxes, interest, etc., accrued	64,618	70,326
Circulation (national banks)	651,155	650,946
Due to other banks and bankers	4,330,605	4,289,337
Certified checks and cashiers' checks ..	655,649	1,119,943
Individual deposits..	48,882,296	51,132,554
United States deposits	187,827	194,024
Other liabilities	2,312,770	2,403,197
Total liabilities ..	\$64,893,362	\$68,132,558

FOREIGN EXCHANGE

BY FRED I. KENT

VICE-PRESIDENT, BANKERS TRUST COMPANY, NEW YORK

STABILIZATION IN EUROPEAN EXCHANGES

Causes.—The year 1927 saw a much higher degree of stabilization in the foreign exchanges of the world than has been true since the outbreak of the war in 1914. This has been due partly to the fact that those countries which have returned to a gold basis have been able to make it effective, and partly because other important countries have succeeded in stabilizing their national currency within what might be called gold point limits as to percentages of fluctuation. Throughout 1927 there has been almost a complete absence of spectacular movements in most of the European currencies.

Results.—One very important result that has followed the stabilization of European exchanges has been the resumption of the force of relative money values in different world financial centers upon exchange rates that had been almost entirely missing since 1914. While exchanges are subject to violent fluctuations which can not only nullify differences that may exist in interest rates in two countries but accomplish exchange losses as well, it could not be expected that money would flow naturally from a cheaper money market to a dearer money market as is so important to trade and industry. The return, therefore, of the influence of relative national money rates upon the course of foreign exchanges, representing as it does one further step in economic restoration, has been most beneficial.

INVESTMENTS ABROAD

Higher Interest Rates.—Of course entire freedom in the flow of money to take advantage of higher interest rates that may prevail in a foreign country, can only exist when both countries are on a free gold basis. On the other hand, when there is reason to believe that the control of an exchange has been made sufficiently effective to keep fluctuations within

gold point percentages and there is confidence that the rate at which an exchange has been stabilized will be maintained for a period, large money movements can and do take place. The year 1927 has seen money in great volume invested in foreign countries for the purpose of taking advantage of higher interest rates.

EUROPEAN EXCHANGE RATES

The pound sterling has been remarkably steady throughout the year and, with the exception of a decline of about $\frac{1}{2}$ cent from 4.85 $\frac{1}{2}$ at the beginning of January to 4.84 $\frac{15}{16}$ towards the middle of February, the course has been upward, the rate rising gradually but steadily to a high of 4.87 $\frac{13}{16}$ during the latter half of November. This strength has been due partly to attractive interest rates maintained in London as compared with other nations. During the last half of the year many dealers were anticipating a decline in the rate against the end of the year imports by Great Britain of cotton and grain.

This decline, however, did not take place for three principal reasons. In the first place, payments for British imports of cotton and grain were spread in a different manner than is customary. Second, the opportunity to invest money in Great Britain at higher rates of interest than prevailed in other countries, particularly the United States, resulted in huge transfers of funds to London strictly for investment. Third, as between Great Britain and the United States, gold was being imported by certain European countries for the purpose of increasing central bank reserves;—the actual gold was that which represented the weekly remittances from South Africa, whereas the credits that enabled the importations were in large part furnished in the United States. This situation naturally resulted in British gold being purchased by dollar exchange, thereby increasing the rate for ster-

ling. The final result of these three developments was that the pound sterling in the New York market went up to 4.88 $\frac{7}{16}$, near enough to the gold point which was 4.8855 at the time so that gold shipments were actually made to London.

The French franc, after declining from 3.98 to 3.92 cents in January, was held by the French Government at approximately 3.91 $\frac{1}{2}$ to 3.93 cents throughout the entire year. At the beginning of the year French industry was so concerned that the Government considered it advisable to give some assurance that an effort would be made to maintain the franc on a stabilized basis while the difficult economic situation was being worked out to a point where final and legal stabilization could be undertaken.

It was not considered advisable to attempt legally to stabilize the franc while the Inter-Allied Debts remained unsettled, nor before sufficient progress had been made in restoration of sound business and industrial conditions in the country to warrant the belief that such legal rate as might be fixed could be maintained. The progress of the Government in economic restoration has been so marked that it has been able to make good the assurance given to French industry, and the rate for the franc has kept within the bounds determined upon.

For the first time in approximately a decade, the French people have enjoyed a stable currency for such a long period and the financial world generally has voiced its admiration of the able manner in which the French Prime Minister has controlled what, for a time, seemed to be an almost impossible situation.

The German reichsmark showed a tendency towards lower levels in the early months of the year, easing off from a high of 23.79 cents early in January to 23.70 cents by the middle of that month. The rate fluctuated around that figure until the middle of May, when it broke suddenly to 23.66. This was not much of a decline, but reflected the panic which occurred on the Berlin Bourse May 13. On that day the stock market, which had shown signs of weakness

before, suffered a severe decline, some stocks breaking as much as 40 to 60%. "The immediate cause of the panic was the announcement on May 12 by leading banks that they would reduce their prolongation credits and advances on securities by 25% before mid-June, and by a further unstated proportion after that date." (From *The Economics* of May 21.) Reparation transfers for 1927 were successfully made without disturbing the German mark.

One difficulty lay in the large amount of foreign money which was invested in German securities during 1926 and that was subject to withdrawal at the will of the foreign investors. It was anxiety over this situation that caused the action of the head of the Reichsbank that resulted in the aforementioned announcement about reducing the funds which they had been lending on the stock exchange. The action of the banks, however, did not meet the difficulty, as money went into the market through private sources as the banks withdrew funds. It was on this account that the stock market recovered promptly and it is interesting to note that no failures followed the Black Friday of May 13, presumably for the same reason.

The ability of Germany to obtain long-time foreign loans bettered this situation materially, as it encouraged industry to undertake commitments that would otherwise have been dangerous. Just how far Germany should go in utilizing foreign credits became a subject of considerable controversy. Stimulated by exceptionally high interest returns, the rate continued to advance during the latter half of the year to slightly over 23.90 cents during the last half of October. It reacted from that price to 23.85, at about which it held firm until the last of December, closing at 23.89 $\frac{1}{2}$.

Italian lire were reactionary the first month and a half of the year, the rate declining from 4.50 cents during the first week in January to 4.30 by the middle of February. This was only a temporary decline and on a continuance of the Government's policy of revaluation, lire advanced with violent fluctuations to higher

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levels. The highest point was reached towards the end of June at 5.84 cents. A sharp decline set in, sending the rate down to about 5.40 by the middle of July. Due to the rapid rise it was feared that industrial conditions would become acute in Italy and the Government, therefore, abandoned its policy of striving for a higher lira and announced that it would maintain the rate until October between 90 and 89 to the pound sterling, which is equivalent to about 5.41½ and 5.47½ cents respectively.

Towards the end of September the buying of lire was heavy, evidently in anticipation of further revaluation on the part of the Government, and during the first week of October the rate rose sharply to 5.54 cents. The Government intervened, however, and brought the rate down rapidly to about 5.45, around which figure it remained steady. Later in the year it was announced that the rate would continue to be held between 89 and 90 to the pound sterling. December 21 the Government established the legal value of the lira at 19 lire per dollar; 92.46 per pound sterling and 3.76 per gold franc. Lira closed that night at 5.43 and opened the next morning at 5.27. This was one of the most interesting exchange developments in the year and, if it proves possible to make a stabilized rate effective, which seems probable in view of the protection arranged by the Italian Government, Italian exchange will be in even better position than it was previous to the war.

Scandinavia.—Swedish Kronor have ruled firm the entire year and have shown a tendency to follow sterling. The rate rose gradually with minor fluctuations from 23.70 cents in January to 23.93 cents in November, and 27.04 cents at the close of the year. Danish Kroner also moved up from 26.68 to 26.82½ cents. Norwegian exchange was the most active of the three and continued the advance which set in during 1926, rising from 25.43 cents at the beginning of the year, with wide fluctuations occurring periodically, to 26.64 in December.

Dutch guilders, after holding steady around 40 cents up to and

through June, sought higher levels, rising to 40.41 cents in November and in December to the gold export point, resulting in the actual shipment of gold from the United States.

Spanish pesetas were very active most of the year and were a favorite with the speculative element. Fluctuations were wide and sensitive to all rumors concerning Spain. The rate was quoted during the first week of January at about 15.50 cents and rose to about 18.15 at the end of March. From this point they declined to about 17.50 towards the middle of April. After hesitating around this figure for several months, a further reaction set in and towards the end of August the rate was quoted at 16.80, which was the lowest it had been since the early months of the year. Pesetas rallied from this point to 17.62 during the third week in September and after further violent fluctuations continued their decline to about 16.75 the end of December.

SOUTH AMERICAN RATES

Argentina.—Among the South American currencies the rise of the Argentine peso was most impressive. With the exception of minor reactions the rate rose steadily from 41.37 cents early in January, quoting in terms of paper pesos for convenience, to about 42.45 cents early in June, which placed it on a parity with the American dollar. It continued to rise, nevertheless, and reached the rate of 42.56 near the end of June which resulted in the shipment of over \$20,000,000 in gold to Argentina from this country. These shipments were a direct response to loans made Argentina by interests in the United States.

Later in the year more gold was shipped due to the continued advance of the peso which reached a high of 42.81 cents by the middle of December. Altogether the United States lost to Argentina during the year 1927 \$61,390,000 in gold. It is interesting to note that while the mid-year gold shipments to Argentina were in payment of direct loans to Argentina, those in December were the result of arbitrage; that is, Argentina took dollar exchange from

LIFE INSURANCE

Europe in payment for its exports to Europe and used such exchange to buy American gold. The dollar exchange so received was created by dollars loaned Europe by the United States.

Brazilian milreis declined sharply from 12.16 cents early in January to 11.68 cents by the 15th. They rallied to about 11.95 cents by the middle of February, at about which rate they remained steady for a time, but eased off gradually to 11.77 by July 9. They slowly rose again from this figure to about 12.03 cents by mid-December. A loan to Brazil caused this rise and it was paid through the shipment from the United States of \$34,175,000 in gold in December.

Chilean pesos were fairly stable throughout. They declined slowly from 12.05 cents in January to 11.96 cents by the end of February. After remaining at this figure for about a month they advanced to 12.12 cents during the first week in April, from which they again receded to about 12 cents by the end of May. In September they moved upward again, reaching 12.31 cents by mid-December. The gold movement was small and \$6,574,000 was shipped to the United States from Chile but none was exported to Chile.

ASIATIC RATES

Japanese yen reached their highest point at 49.31 cents towards the end of March. The rise was due largely to the expectation of Japan's return to the gold standard. The yen received a serious setback, however, when the failure of a big commercial house was announced early in April, which also led to the temporary embarrassment of a quasi-Government bank. The yen broke

sharply to 46.50 cents by the third week in April but recovered part of its loss, rising to 47.75 cents. It fell again, however, and with violent fluctuations continued its downward course, reaching a low of 45.62 cents by the middle of November, from which it rallied to about 46.69 cents at the end of December.

China.—Currency conditions in China have been even more chaotic than usual due to the various expressions of nationalism that have taken active form in political and military developments. Shanghai taels rose from 59½ cents early in January to 66½ cents the first week in February, from which they declined to 59½ cents towards the end of March and then rallied to 63½ cents during the second week in April. They continued to fluctuate between approximately 61 cents and 63 cents until towards the end of the year when they rose to 64 and 64½ cents.

RETURN OF GOLD BASIS

Taking the year 1927 as a whole it can safely be said that it witnessed a partial culmination of the efforts to bring about financial stability that have been so important a feature in European and world development since the Armistice. Probably nowhere has this been more evident than in the trend of the foreign exchanges, for they have carried the story of the general return to a gold basis that has been evidenced during the year and of the resultant gold movements and consequent narrow exchange fluctuations. Gold movements are in themselves exchange stabilizers, but they cannot occur with the freedom that is necessary for their perfect action except as trading countries generally are on a gold basis.

LIFE INSURANCE

By WENDELL M. STRONG

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NEW INSURANCE

No event of outstanding importance in life insurance took place during 1927. As in 1926 the year

marked, so far as can be ascertained at the time this is written, a further but small increase in the amount of new insurance issued.

New Business Increases.—Since 1922 up to the present time there has been an increase each year in the amount of new life insurance. In the year 1926 the amount of new insurance was more than fifty per cent above that of 1922, reaching the enormous total of over sixteen billion dollars. In 1927 the total amount of new business—all classes—remains at the peak and in total is, at this writing, slightly greater than in 1926. There is, however, some variation in this respect between "Ordinary," "Group," and "Industrial" business. While the total of ordinary and industrial shows a gain over business of 1926 there has been a falling off in new group insurance. It is to be observed, however, that group insurance which is written in very large units is subject to much greater fluctuation than the other classes of business and that these other classes (ordinary and industrial) are the real indices of the progress of the business in general. Towards the close of the year there appeared a marked decrease in the amount of ordinary business indicating, perhaps, that it had become a little harder for people in general to find the means to undertake payment of new premiums.

Expansion in Insurance and Assets.—The large amounts of insurance issued through 1926 and 1927 mean, of course, a very great increase in the total insurance in force and in the assets of the companies. These figures are available statistically only up to the end of 1926, but there is little doubt that on December 31, 1927, the amount of insurance in force (not including that in fraternal associations) was about eighty-five billion dollars and that the companies had assets of over fourteen billion dollars. The rate of increase of insurance in force is approximately seven billion dollars per year and of the assets over one billion. Total insurance in force and assets would continue to increase for a considerable time even if the amount of new insurance issued should show a considerable falling off, a contingency which does not seem to be at all probable in the near future.

DIVIDENDS AND INSURANCE COST

Dividends.—The tendency of dividends is still upward. Although several prominent companies will make no change in dividend scales for 1928 others have announced increases, some of which are substantial. The expectation of a falling interest rate has not yet affected dividend schedules, while mortality continues to improve.

Premium Rates.—In this connection there has been during the past year some agitation in certain quarters, and, in particular, by one insurance journal, for lower premium rates for participating policies. Two well known companies have lowered their rates for such policies and it may be that others will do so also. While the nominal premium rate which he pays is not really a matter of importance to the holder of a participating policy (since any saving comes back by way of dividend) it is probable that some reduction in the rate could be made without sacrificing any of the safety which is so essential to life insurance. Whether this will be done by other companies than the two mentioned is as yet uncertain, but the subject is under discussion. Many practical difficulties are involved in a change of premium rates while the net effect to the policy holder would be slight.

Disability Benefits.—The tendency to increase premium rates for disability benefits included in life insurance policies continues. Rate increases are, however, usually accompanied by increased liberality in the terms of the policy provisions and sometimes by extensions in benefits. Meanwhile the amounts expended by the companies in paying these benefits and in waiving premiums on policies on disabled lives are increasing very rapidly. The joint investigation into the cost of disability insurance, to which reference was made last year, has for the reasons then stated been of little assistance in determining adequate premium rates and there is still considerable variation to be noted in the rates of different companies. The many variations in the details of the benefits

granted, however, render a valid comparison difficult.

SAFEGUARDING THE BENEFICIARY

Modes of Settlement.—Until a few years ago it was considered that the duty of a life insurance company was complete when it passed over to the beneficiary the proceeds of the policy. This meant that the beneficiary, frequently a woman without business knowledge, stood in great danger of losing the insurance money through unwise investment. In recent years the policies of nearly all companies have contained optional Modes of Settlement which could be elected by the insured, or by the beneficiary after the death of the insured, in lieu of payment in a single sum. Thus, under these options the proceeds may be allowed to remain in the hands of the company at interest, or they may be paid as a life income to the beneficiary, or as an income for a selected period of years. These settlements are almost equivalent to the trusts frequently left by will. Their use has been increasing so rapidly that at present, election of such settlements is being made on between one and two billion dollars of insurance a year. This is one of the greatest advances made in the progress of life insurance business since it completes the purpose of the insurance by not only providing a sufficient capital to care for the needs of the beneficiary but also making provision to safeguard that capital sum for him.

Life Insurance Trusts.—These settlements differ from the ordinary trust chiefly in the fact that they are contractual obligations of the company, and have the solvency of the company back of them instead of depending on investment of special funds. Chiefly owing to the widespread use of the "Optional Settlements" referred to above there has arisen a new form of trust known as "Life Insurance Trust," sometimes called an "Unfunded Trust." In these trusts the capital is created by life insurance and the Trust Company is named as beneficiary, the settlement desired being set forth in a separate trust instrument. Where

it is desired that the trustee shall have discretion, such, for instance, as under certain circumstances using part of the principal of the trust, the trustee arrangement has the advantage over a Mode of Settlement. On the other hand, the Mode of Settlement has the advantage of the greater security since there is a contract which only the insolvency of the Company could avoid, while under a trust the chance of loss in a comparatively small group of securities must be taken.

BUSINESS IN FOREIGN COUNTRIES

The Trend.—Prior to the World War some of the larger United States companies did a very extensive foreign business, but one, at least, of these had shown a tendency to decrease the foreign territory in which it did business rather than to expand. As a result of the war there was a very general withdrawal of the companies from foreign countries. In the year 1927 an important reversal of this policy is to be noted in that the largest company of all, the Metropolitan, has entered Great Britain. It has done so, however, for the issue of group insurance only.

GENERAL

Examination.—An unusual situation arose during the year when the Insurance Department of California refused to accept, in lieu of its own examination, the examination of Missouri companies made by the Insurance Department of Missouri. This action was the result of the circumstances surrounding the change of ownership of certain stock companies in Missouri and because of the feeling that in some instances these changes were not in the interests of the policyholders but were made rather for the financial gain of particular stockholders.

Northwestern National.—Another interesting occurrence in connection with stock ownership of life insurance companies was the issue of capital stock by the Northwestern National, a well-known mutual company. This is the first time a mutual company has ever taken such a step. The company states as the reason for its

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action that it wishes to compete in the non-participating field and it claims that the change will benefit the participating policyholders through reduction in overhead expense and in the additional security afforded by the stock capital. To many it will seem, however, that these advantages are of questionable value and do not compensate for the fact that

the policyholders will no longer have full control of their company.

STATISTICS OF LIFE INSURANCE COMPANIES

The tables below give statistics for several years ending with December 31, 1926. Figures for 1927 are not yet available except in a general way as stated above:

ORDINARY AND INDUSTRIAL INSURANCE

(Insurance Year Book)
(In millions)

Year	Number of Companies	End of Year		Premiums Received	Total Income	Total Payments to Policyholders	Total Disbursements	New Business	Amount in Force at End of Year
		Admitted Assets	Surplus ¹						
1926	322	12,940	1,364	2,624	3,330	1,373	2,124	\$16,337 ²	\$78,492 ²
1925	308	11,538	1,234	2,384	3,018	1,246	1,936	15,473 ²	71,642 ²
1924	297	10,394	1,137	2,122	2,703	1,205	1,813	13,194 ²	63,780 ²
1923	291	9,455	1,077	1,896	2,424	1,089	1,680	12,070 ²	56,904 ²
1922	260	8,718	974	1,672	2,137	1,007	1,481	10,539 ²	50,028 ²
1921	264	8,068	810	1,525	1,944	835	1,281	9,126	45,574

¹ Includes amounts set apart for dividends to policyholders during following year.

² Includes group insurance.

SURRENDERS, LOANS, AND DIVIDENDS ¹

(New York State Report)
(In millions)

Year	Number of Companies	Amount in Force at End of Year ²	Amount of Policies Surrendered ²	Policy Loans at End of Year	Dividends to Policyholders	Amount Paid for Surrendered Policies
1926.....	44	\$53,680	\$864	\$1,336	\$362	\$236
1925.....	41	47,841	748	1,212	329	207
1924.....	38	41,787	698	1,108	330 ³	198
1923.....	38	37,545	639	1,033	284	192
1922.....	37	33,461	614	977	246	191
1921.....	37	30,678	441	917	180	147

¹ Only life companies reporting to New York State.

² Includes group insurance but not industrial.

³ Includes dividend funds on foreign business transferred.

UNITED STATES INDUSTRIAL INSURANCE COMPANIES

(Insurance Year Book)
(In millions)

Year	Number of Companies	New Business	Insurance in Force at End of Year		Premiums Received	Losses Paid
			Number of Policies	Amount		
1926.....	49	\$3,954	76	\$14,035	\$1,040	\$203
1925.....	60	3,656	74	12,824	941	176
1924.....	54	3,011	68	11,344	818	153
1923.....	49	2,015	63	10,107	712	142
1922.....	45	2,268	58	8,887	611	119
1921.....	44	1,943	54	8,006	544	106

FIRE INSURANCE

FRATERNAL INSURANCE

The following summary derived from tables in "Statistics, Fraternal Societies" published by *The Fraternal Monitor* gives particulars of the insurance business of over 125,000

lodges covering the entire fraternal field, and will indicate progress during the year 1926. This will be seen to have consisted of an increase in insurance and in assets while membership has decreased.

	1925	1926
Insurance in force December 31.....	\$10,289 millions	\$10,408 millions
New insurance	1,196 "	1,207 "
Total adult benefit membership December 31.....	9.01 "	8.85 "
Number of lodges.....	127,346	125,876
Total assets December 31.....	\$711 millions	\$772 millions

FIRE INSURANCE

By E. R. HARDY

NEW YORK FIRE INSURANCE EXCHANGE

Business Stabilized.—The business of fire insurance is well stabilized at the present time. While a year's business will show variations from the past year, over a five- or ten-year period the stabilized condition is manifest. The stabilization, however, unless there be a conflagration, has now reached the point where it is more or less firm, and the volume of business transacted will not show much variation except as the wealth of the country increases. The figures quoted represent, in general, all classes of companies—American stock, foreign stock, mutuals, cooperatives, and reciprocals.

The amount covered by policies in force is \$160,000,000,000 for fire, and for the other branches which the fire companies write, \$42,000,000,000. The only way to compare this in order to make it somewhat intelligible is to do so with the wealth of the United States. That is now estimated at \$320,000,000,000. Inasmuch as fire insurance protects practically all burnable property, it will be noted that one-half the wealth of the United States is represented by the face amount of policies of fire insurance.

FINANCIAL ASPECTS

Assets.—The admitted assets of the companies is slightly in excess of \$2,000,000,000, with liabilities of \$1,100,000,000. The income has reached the total of \$1,200,000,000, with dis-

bursements of \$1,100,000,000. The total number of companies on which these figures are based is 364.

Income.—The income from fire premiums is approximately \$790,000,000; other premiums, \$250,000,000; interest, dividends and rent, \$85,000,000; profit on sales of securities, \$19,000,000; all other sources, \$59,000,000. These premiums are based on the accepted method of accounting for premiums written. The books being closed on the calendar year, and much of the business written in the last two months not being paid for until after the first of the year, it is necessary to adopt the "premium" method as the proper one to set up so as to establish a comparison year by year.

Losses.—The fire loss is \$400,000,000; all other loss is \$135,000,000. This shows that an extremely large part of the premiums is used by the fire companies in the direct payment of losses. The business is based on the fact that at least one-half of the income will be used in the payment of losses. As a matter of fact, it runs in excess of that over a series of years, and really does so for most years at the present time.

SCOPE OF UNDERWRITING

Fire insurance companies write other lines, but these are a small part of their total business. The lines written are ocean marine, motor ve-

X. BUSINESS AND FINANCE

hicle, aircraft, inland navigation and transportation, tornado, windstorm and cyclone, hail, sprinkler leakage, riot and civil commotion, explosion, earthquake, and others. These ten sources produce only \$60,000,000 of premium in a year, and have a loss ratio of approximately 60% at the present time.

St. Louis Tornado Loss.—There were two outstanding features during the year—one in loss, the other in legal decisions. In the fire loss, there was no outstanding conflagration. The really prominent occurrence was the windstorm loss in the city of St. Louis. A conservative estimate puts this loss at \$7,000,000. While only about one-half the loss in Florida of the year before, nevertheless it is a substantial sum.

LEGAL QUESTIONS

Rates and Premiums.—The question has been raised, both in the State of Missouri and in the State of Kansas, as to whether or not the companies should consider, in making their rates, the income which they derive from their investments. The highest court of the two States noted has decided against the companies. The Missouri case is now before the Supreme Court of the United States, and its decision will determine a matter which has been in dispute for many years. In both of the States the question came up because the companies sought an increase of rate, claiming that the income from premiums was not sufficient to pay losses and other expenses, and leave some chance for, if not an actual, profit. The State, through its proper official, has resisted these requests for an advance to some extent, claiming that the companies

should consider their income from investments as part of their current income. Inasmuch as the question is of large importance, both to the community and to the companies, a brief statement of the point involved is given.

Income Argument.—The companies contend that their receipts from premiums should be sufficient to support the business, and that there should be no consideration given to the fact that they are deriving an income in the form of interest on investments, etc., from their assets. They further make the point that the reserves which they are required to carry are called for by law. In other words, it is an obligation placed upon them to put up these reserves. The other side of the question is represented by the attitude that the whole income of the companies must be considered in the adjustment of rates, and not merely the receipts from premiums.

If certain reserves are required, then the income from those reserves should be considered. The claim is made that it should go beyond that, even, and the total income other than from premiums should be considered as a part of the income of the company, and all of it is really derived from the business of fire insurance. If, for instance, in a given State, it was clear the premiums should be increased 10%, but the receipts from other sources were 10% of the premium income, then the State is apt to say that the companies do not need to increase the rates, because their total income from both sources is sufficient to meet their obligations. Whichever way the question is decided, its effect on the business of fire insurance cannot but be important.

MARINE INSURANCE

By DOUGLAS F. COX

PRESIDENT, U. S. MERCHANTS' AND SHIPPERS' INSURANCE COMPANY

Underwriting Results.—At the present time, it is of course impossible to discuss in anything but the most general way, the results of the

business written in 1927, as the companies' statements will not be published until some time after the close of the year. It can only be said that,

CASUALTY AND MISCELLANEOUS INSURANCE

although somewhat better rates have been obtained in a few classes of business, the losses have been quite frequent and severe, so that it seems unlikely that any profits will be shown by the companies generally.

The figures published in 1927 relating to the transactions of 1926 show, as usual, only premiums written and losses paid and therefore do not afford any real basis for arriving at the profit or loss, but so far as they go, they indicate that there was a loss to the companies generally, although there were undoubtedly some exceptions.

Outlook for 1928.—As to future prospects, it can be safely stated that there is less cutthroat competition now than there was during the years immediately following the close of the Great War and that a growing desire is evident to obtain more nearly adequate rates, but the improvement is very slow and will not be reflected in results for some time to come. The process of building up is necessarily gradual and can only be carried on by patiently taking up one class of business after another. For example, burlaps and jute from Calcutta constitute a class which has been done at a loss for several years, as the value of the cargo in each steamer is large and there have been a succession of very costly fires, especially during discharge at New York. The companies are now obtaining somewhat better rates, exchanging reinsurance among themselves through an association and jointly making a thorough investigation into the cause of the fires in the hope of finding some way of reducing their number in the future.

Foreign Companies.—So much of the Marine Insurance of this country

is placed by brokers in foreign markets, particularly in England, that those who are in the business here are always interested in conditions in the London market. It is difficult to obtain figures showing the underwriting results of the British companies as a whole, but judging from the remarks of the Chairmen and Managing Directors at the Annual Meeting of their respective companies, drastic remedies are needed to put the business on a basis which will make it possible to obtain some profit on future transactions.

There has been a moderate general increase in the rates during the year, in respect to insurance on hulls and in July a meeting of chairmen and underwriters was held at the office of the Royal Exchange Assurance to consider the conditions in cargo insurance, at which a committee was appointed to bring about agreements, in conjunction with underwriters at Lloyd's, for the betterment of the cargo business. It is also said that the International Marine Insurance Union, which is made up chiefly of Continental European companies, is working along the same lines.

Legislation.—An outstanding event of the year in this country was the enactment of similar laws in the States of New York and Pennsylvania altering the basis of taxation of marine insurance. Heretofore, the tax has been a percentage of premiums written, regardless of whether the business resulted in a profit or a loss. Hereafter, the tax will be a percentage of the profits, as it has always been in England. This removes one of the handicaps under which our companies have suffered in their competition with the London market.

CASUALTY AND MISCELLANEOUS INSURANCE

BY A. DUNCAN REID

PRESIDENT, GLOBE INDEMNITY COMPANY

COMPULSORY AUTOMOBILE INSURANCE ACT

Application.—From a casualty insurance viewpoint, the most interest-

ing feature of 1927 was the application of the Compulsory Automobile Insurance Act in the State of Massachusetts. This statute, which was

discussed at length in the American Year Book of 1927, became effective January 1, 1927. It requires liability insurance covering personal injuries to the public to be carried as a condition of registration of every automobile in the State, with the exception of a few excluded classes. It was estimated that the Act applied to some 800,000 automobiles.

Rates.—The rates for this insurance are promulgated by the State Superintendent of Insurance and are expected to be based upon the actual experience of the insurance companies issuing the policies. Preliminary rates issued for use during the first year were materially lower, considered on a state-wide basis, than rates previously charged by insurance companies. The Superintendent of Insurance called for filing of statistics covering the period up to May 31st to determine whether the experience indicated that rates for 1928 should be different from those used in 1927.

The loss ratios reported by the companies varied widely and the combined results did not, in the opinion of the Superintendent of Insurance, warrant any change in rates. Widely different opinions are held by the various companies as to whether the rates were adequate, some believing them to be sufficient and others being convinced that a serious underwriting loss would result. Toward the close of the year, as the experience grew more mature, the conviction that the rates were much too low found wider currency. Some of the companies were definitely alarmed at the prospect of loss and at least one company withdrew from the state, sacrificing its opportunity to transact other business there rather than to write compulsory automobile insurance at what it believed would be a substantial underwriting loss.

Litigation.—Before its passage, it was predicted that from the law would result a vast amount of additional litigation. State-wide figures are not yet available, but by the close of the year 1927, the calendars of the superior Courts in Boston as well as of other courts of inferior jurisdiction were congested by suits for personal injuries and for property

damage growing out of the use of automobiles.

Insurance covering liability for damage to property is not required by the Act. It was generally believed that many suits, based on allegations of personal injury, were brought which would not have been entered had claims for damage to property been paid. All companies reported that a notice of a suit was frequently the first advice the company had of an accident. Ignorance by many not before insured was given as the principal reason for many policyholders failing to notify their insurance carriers promptly after an accident. But claim adjusters also noted an unusual indifference to the rights of the company on the part of many policyholders who resented being compelled by the State to purchase insurance.

Appraisal of Act.—Proponents of such legislation frequently claim that a compulsory automobile insurance act will have a tendency to eliminate reckless and unfit drivers. No such tendency had become apparent by the end of the first year's application of the Massachusetts statute. One year is far too short a time in which to determine whether such an act is valuable or dangerous. But the first year's test of the Massachusetts law does not afford much hope that its advantages will outweigh its obvious dangers.

IN OTHER STATES

Connecticut.—The law in Connecticut relating to compulsory insurance on automobiles passed in 1925 was amended in 1927. This act provides for insurance covering both personal injuries and property damage being required in certain cases where it appears after an accident that the person operating the automobile lacked reasonable financial responsibility.

Enactments.—During 1927 similar acts were passed in Maine, Minnesota, New Hampshire, Rhode Island and Vermont. The Maine act became effective January 1, 1928; the Rhode Island act, June 21, 1927; and the Vermont act, June 1, 1927. While each of these acts is different, none of them requires insurance from all

CASUALTY AND MISCELLANEOUS INSURANCE

automobile owners in the state, and each of them incorporates the principle that insurance may be required by the state only after an accident, the investigation of which indicates a special need for a showing of financial responsibility on the part of the car owner.

Investigations.—In addition to the seven states, including Massachusetts, now having some form of so-called compulsory automobile insurance, legislative committees or commissions are investigating the subject in California, Maryland and Oregon. Also, thirty-five states have enacted laws making insurance compulsory in connection with automobiles used for the interurban transportation of passengers or property for hire. These states are Arizona, Arkansas, California, Connecticut, Idaho, Illinois, Indiana, Kansas, Kentucky, Maine, Massachusetts, Michigan, Minnesota, Mississippi, Montana, Nebraska, New Hampshire, New Jersey, New York, North Carolina, North Dakota, Ohio, Oklahoma, Oregon, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, Utah, Vermont, Virginia, Washington, West Virginia and Wisconsin.

Harbor Workers' Compensation Law.—Another feature of the year 1927 was the enactment by Congress of what is known as the Longshoremen's and Harbor Worker's Compensation Law, which became effective

July 1, 1927. The purpose of the Act is to substitute compensation benefits comparable to those provided by the various state laws to other classes of workmen, for the uncertain remedies given injured maritime workers under admiralty and maritime laws. Efforts had previously been made by various states to extend the compensation principle to these workers, but these failed because the Federal Constitution withholds from the states jurisdiction in such cases. Previous statutes passed by Congress had been declared unconstitutional by the Supreme Court.

GROWTH OF BUSINESS

Premiums.—During the year 1926, the remarkable growth of the casualty, surety and miscellaneous business in the United States was continued. The total premiums written by all companies was \$782,852,347, according to *Best's Insurance Reports*. This represents a gain of over \$96,000,000 compared with the total for 1925—an increase of 14%. In 1919, the total of this business was just over \$350,000,000. Thus, it will be seen that this division of insurance has more than doubled in volume in seven years.

Underwriting Loss.—The business continues to show an unsatisfactory underwriting result. According to the *Insurance Year Book*, the result of one hundred leading companies in

Class of Business	1926		1925	
	Premium Written	Number of Companies	Premium Written	Number of Companies
Accident and Health	\$137,137,609	131	\$120,155,455	113
Auto and Teams Property				
Damage and Collision	68,386,351	111	58,353,572	81
Burglary and Theft	30,935,744	61	28,200,130	58
* Check Alteration	22,723	1	17,846	1
Credit	4,925,525	7	4,887,767	5
Engine and Flywheel	3,723,097	23	3,047,533	22
Fidelity and Surety	96,900,875	72	91,015,732	56
Liability	204,664,991	123	171,640,766	90
Livestock	1,099,190	3	1,323,803	2
Plate Glass	18,565,055	77	16,345,003	59
Sprinkler	925,620	5	915,854	4
Steam Boiler	7,163,884	29	6,901,370	27
Workmen's Compensation ...	199,498,795	108	175,693,616	87
Workmen's Collective	230,748	7	240,117	6
Unclassified	8,672,140	25	25,117,025	
Totals	\$782,852,347		\$686,150,360	

* Reported by most companies under the head of Fidelity and Surety.

X. BUSINESS AND FINANCE

1926 was an underwriting loss of 1.0% on an income earned of \$666,360,977. This is better than the loss of 1.7% for 1925 and 2.4% in 1924.

Of the one hundred companies, sixty-three are writing nearly every class of miscellaneous insurance and the result of this group was a combined loss of 1.8% on \$546,900,624 of underwriting income earned. Twenty companies made an underwriting profit and forty-three made a loss. Twenty-two companies writing only accident and health business made a profit of 0.1%, twelve making a profit and ten a loss. A third group includes six fidelity and surety companies which made a total profit of 6.6%.

The *Insurance Year Book* comments on the fact that over a period

of twenty years companies of this class have suffered an underwriting loss of 1.0% on earned underwriting income of over \$5,314,000,000.

Fidelity and Surety Bonds.—The year 1927 was brisk with the continued development of fidelity and surety business. The figures published for 1926 show a handsome gain over 1925, and doubtless 1927 will equal the past performances of production gains. The year was marked by the advent of a number of new companies entering the field and the commencement of operations for the limitation of acquisition costs. The surety business showed a satisfactory experience; but in the fidelity branch the losses continued to be very high because of crime from embezzlement and hold-up.

COGNATE SOCIETIES

AMERICAN ECONOMIC ASSOCIATION.—Northwestern University, Evanston, Ill.

AMERICAN FAIR TRADE LEAGUE.—71 W. 23rd St., New York, N. Y.

AMERICAN INSTITUTE OF ACCOUNTS.—135 Cedar St., New York, N. Y.

AMERICAN INSTITUTE OF WEIGHTS AND MEASURES.—115 Broadway, New York, N. Y.

AMERICAN PROTECTIVE TARIFF LEAGUE.—33 E. 10th St., New York, N. Y.

AMERICAN REAL ESTATE OWNERS' ASSOCIATION, INC.—1440 Broadway, New York, N. Y.

AMERICAN RETAILERS' ASSOCIATION.—128 W. 31st St., New York, N. Y.

AMERICAN STATISTICAL ASSOCIATION.—114 Woodward Bldg., Washington, D. C.

CENTRAL ASSOCIATION OF ACCOUNTANTS.—51 Chambers St., New York, N. Y.

CHAMBER OF COMMERCE OF THE U. S. A.—Washington, D. C.

CONGRESS OF INTERNATIONAL ASSOCIATION OF NAVIGATION CONGRESSES.

COOPERATIVE LEAGUE OF AMERICA.—167 W. 12th Street, New York, N. Y.

CONSOLIDATED STOCK EXCHANGE OF NEW YORK.—Broad and Beaver Streets, New York, N. Y.

CONSUMERS' LEAGUE OF NEW YORK.—289 Fourth Ave., New York, N. Y.

ECONOMY LEAGUE.—1021 Park Ave., New York, N. Y.

FAIR TARIFF LEAGUE.—2 Rector St., New York, N. Y.

FEDERATION OF AMERICAN INDUSTRIES, INC.—511 Fifth Ave., New York, N. Y.

FRANCO-AMERICAN BOARD OF COMMERCE AND INDUSTRY.—90 Fifth Ave., New York, N. Y.

FRENCH CHAMBER OF COMMERCE.—466 Fourth Ave., New York, N. Y.

GENERAL SOCIETY OF MECHANICS AND TRADESMEN OF THE CITY OF NEW YORK.—20 W. 44th St., New York, N. Y.

HOME MARKET CLUB.—99 Bedford St., Boston, Mass.

INSTITUTE OF ECONOMICS.—26 Jackson Place, Washington, D. C.

INTERNATIONAL ACCOUNTANTS' SOCIETY.—160 Broadway, New York, N. Y.

INTERNATIONAL FREE TRADE LEAGUE.—Wilmington, Del.

ITALIAN CHAMBER OF COMMERCE IN NEW YORK.—99 Hudson St., New York, N. Y.

LEAGUE FOR INDUSTRIAL RIGHTS.—165 Broadway, New York, N. Y.

MERCHANTS' AND CONSUMERS' LEAGUE.—500 Fifth Ave., New York, N. Y.

COGNATE SOCIETIES

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| <p>NATIONAL ASSOCIATION OF COST ACCOUNTANTS.—130 W. 42nd St., New York, N. Y.</p> <p>NATIONAL ASSOCIATION OF CREDIT MEN.—41 Park Row, New York, N. Y.</p> <p>NATIONAL ASSOCIATION OF REAL ESTATE BOARDS.—310 S. Michigan Ave., Chicago, Ill.</p> <p>NATIONAL ASSOCIATION OF RETAIL GROCERS.—601 Gumbel Bldg., Kansas City, Mo.</p> <p>NATIONAL BUREAU OF ECONOMIC RESEARCH, INC.—474 W. 24th St., New York, N. Y.</p> <p>NATIONAL CONSUMERS' LEAGUE.—156 Fifth Ave., New York, N. Y.</p> <p>NATIONAL ECONOMIC LEAGUE.—6 Beacon St., Boston, Mass.</p> | <p>NATIONAL FOREIGN TRADE COUNCIL.—1 Hanover Square, New York, N. Y.</p> <p>NATIONAL RESEARCH COUNCIL.</p> <p>NATIONAL WHOLESALE GROCERS' ASSOCIATION OF THE UNITED STATES.—6 Harrison Street, New York, N. Y.</p> <p>NEW YORK STOCK EXCHANGE.—11 Wall St., New York, N. Y.</p> <p>PAN AMERICAN ADVERTISING ASSOCIATION.—32 Burling Slip, New York, N. Y.</p> <p>PETROLEUM EXPORT ASSOCIATION, INC.—25 W. 43rd St., New York, N. Y.</p> <p>PROTECTIVE TARIFF LEAGUE.—137 Centre St., New York, N. Y.</p> <p>UNITED COMMERCIAL TRAVELERS OF AMERICA.—632 No. Park St., Columbus, O.</p> |
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DIVISION XI

AGRICULTURE AND ALLIED INDUSTRIES

CONDITIONS OF AGRICULTURE

By W. M. JARDINE

SECRETARY OF AGRICULTURE

FINANCE

Crops.—Agriculture in the United States in 1927, despite a discouraging start and unfavorable weather conditions in large areas, produced the principal crops in a volume estimated in October at 1 per cent above the average of the last five years. This result was obtained on a crop acreage about 1 per cent less than that of 1926. Such an achievement is gratifying in view of the difficulties encountered by the farmers. In the Mississippi Valley four and a half million acres of crop land were flooded. In Florida and in a large area extending through southwestern Kansas, northern Texas, and eastern New Mexico long-continued drought damaged growing crops. Up to June 5 only one-fourth of the intended corn acreage had been planted in the lower Ohio Valley, and only one-half in a large part of the eastern and central corn belt. Yet crop production, besides being above the average of recent years, was so well balanced that no marked scarcity of any product existed.

Prices.—Favorable price changes accompanied this showing. In September the Department of Agriculture's index number indicating the purchasing power of representative farm commodities was 92, compared with an average of 85 for the year 1926, and 100 for the five years preceding the war. Prices for some important crops, notably cotton and cattle, advanced materially during the year. The price of cotton in October was more than one-third higher than

in October, 1926. All indices mark 1927 as a year of decided agricultural progress.

Production Costs.—Moreover, the improvement effected was not fully reflected in statistics of production, prices, and unit commodity purchasing power. The ratio between the prices of farm commodities and the prices of other goods gives some indication of the condition of agriculture, but does not tell the whole story. It fails to indicate differences between prices and costs of production. Such differences are a vital factor in farm results. They are influenced materially by efficiency in production, which has increased in recent years. In 1927 technical progress in agriculture was rapid, largely owing to increased use of machinery. Thus the effect of the disparity between agricultural and industrial prices was modified favorably. On fewer acres and with a farm population 3,000,000 less than in 1919, the agricultural industry since 1923 has averaged a larger volume of production than in the years immediately following the war. This increased production, though tending to depress farm commodity prices, has been associated with a compensating decrease in production costs. Estimates of the farm situation which do not reckon with this circumstance omit an important favorable element.

CROPS

Cotton.—The most striking change in the agricultural situation as compared with that of 1926 was in the

cotton belt. The year's cotton crop was estimated in November at 12,842,000 bales, compared with 17,977,000 bales produced in 1926. From the standpoint of price the improvement has been remarkable. It is estimated that, should cotton prices continue at their present level, returns to farmers from the crop for lint alone would exceed by about \$200,000,000 the income from last year's crop. Acreage reduction, boll weevil damage, and the Mississippi floods were mainly responsible for the fact that the year's cotton crop was nearly one-third smaller than that of 1926. Cotton area as estimated in September was 40,626,000 acres compared with 47,087,000 acres picked last year. Floods in the Mississippi valley accounted for some but by no means all of the reduction in cotton planting. The farmers themselves, acting on the advice of Federal and State Departments of Agriculture and of their cooperating marketing agencies, effected much of the reduction voluntarily, thereby showing that intelligent action to readjust production to demand in agriculture is practicable on a large scale.

Corn.—In the North Central States production of corn was about the same as the average production of the last five years, and 6 per cent more than last year. For the country as a whole, the corn crop was estimated in November at 2,753,000,000 bushels, compared with 2,647,000,000 bushels harvested last year and a five year average of 2,767,000,000 bushels. This production was the greatest surprise of the season. A late start and slow growth made it seem almost inevitable that much of the corn crop would be caught by frost. In the eastern and central corn belt, from western Pennsylvania to western Iowa and Minnesota and south through Kentucky, crop yields were unfavorable. West of this region, however, conditions were good. Nebraska's corn crop was twice as large as that of last year, and that of Kansas nearly three times as large.

Wheat.—The wheat belt, especially the northern part of it, had a good year. Spring wheat was a large crop,

and wheat prices held up fairly well. Taking spring and winter wheat together, the country harvested its largest wheat crop since 1922. Wheat production was estimated at 867,000,000 bushels, compared with 833,000,000 bushels harvested last year and a five-year average of 808,000,000 bushels. Winter wheat comprised 553,000,000 bushels of the total. Durum production was 80,000,000 bushels, and spring wheat other than durum 234,000,000 bushels. All spring wheats gave remarkably good yields.

Other Grains.—Oats had a poor start, and the total crop was estimated at 1,206,000,000 bushels, or about 4 per cent less than the quantity harvested last year, and 10 per cent below the average production of the last five years. Barley, planted on a largely increased acreage, yielded 265,000,000 bushels compared with 188,000,000 bushels last year. Increased acreage planted to buckwheat and a yield above the average made the outturn of that crop 16,500,000 bushels, the largest since 1918. Unusual yields of flaxseed on a slightly reduced acreage gave a production of about 24,300,000 bushels, the second largest production of flaxseed in 15 years. Rice production, estimated at 39,300,000 bushels, was above recent average output but below last year.

STOCK

Cattle and Sheep.—Good conditions prevailed in the cattle and sheep industries. The average price of slaughter steers at Chicago in September, 1927, was \$2.63 a hundred pounds higher than a year ago. This was an advance of about 25 per cent. Some of the better grade steers averaged as much as 35 per cent higher than a year ago. Stocker and feeder cattle showed a 19 per cent advance for the year. Top slaughter steers in Chicago about the middle of October sold up to \$17.25 a hundred pounds compared with a top of \$12.70 in October, 1926. Cattlemen were optimistic and were building up their breeding herds. Accordingly, marketing of cattle was less than in 1926. The year's incomes from cattle sales

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therefore did not record the full improvement made, notwithstanding the fact that such incomes were unusually satisfactory.

Sheep and Swine.—Although the market price of lambs averaged somewhat lower than in 1926, the sheep industry as a whole remained in good shape. From the standpoint of prices, the swine industry encountered relatively unfavorable conditions, although neither production nor market supplies were excessive. From February to the end of the summer hog prices declined approximately \$3.50 per 100 pounds. This decline resulted primarily from a sharp curtailment in the foreign demand for American pork and pork products. In some countries the reduction amounted to 50 per cent compared with takings in 1926. Fortunately much of the American pork marketed in the earlier part of the year was produced on relatively cheap corn. In September and October, however, corn prices declined and hog prices advanced.

The dairy industry enjoyed another good year. Although the general trend of dairy production continues upward, consumption of all dairy products has more than regained the momentum acquired before the war, and the outlook is favorable.

FACTORS AND CHANGES

Floods.—Heavy losses were suffered by farmers from the floods which devastated the lower Mississippi valley in 1927. The overflow covered 18,269,000 acres, or more than 28,000 square miles, in Illinois, Missouri, Kentucky, Tennessee, Arkansas, Mississippi, and Louisiana. Nearly 4,500,000 acres of this area were planted to crops in 1927. Of the crop land flooded, 1,839,000 acres were in Arkansas, 1,112,000 in Louisiana, and 662,000 in Mississippi. Estimates of the damage are difficult to make.

Productivity.—In the nine years since the world war ended American agriculture has undergone far-reaching changes. From 1919 to 1924 crop land in the United States diminished 13,000,000 acres—the first decrease ever shown by census statistics in the

agricultural area of the nation. Moreover, the number of farm animals and the number of farms diminished also. On January 1, 1925, the number of horses and mules on farms was 20,619,000, compared with 21,873,000 on January 1, 1920. Yet crop production in the period 1922-26 was nearly 5 per cent greater than in the period 1917-21, and the output of animal products increased fully 15 per cent. Productivity as measured by output per farm worker increased about 15 per cent, a gain probably never before equaled. Since the war farm efficiency has been increased by the utilization of more productive livestock and crops, by shifts toward crops with a higher acre value, and by an extraordinary increase in farm mechanization. From January 1, 1920, to January 1, 1925, the number of tractors on farms increased from 246,000 to 506,000, and a great increase took place also in the use of stationary gas engines and electricity on farms. In certain regions, notably the Great Plains and the new cotton areas of Texas and Oklahoma, large-scale farming has expanded greatly, chiefly under the stimulus of improved harvesting equipment and methods. In the wheat states the combine harvester-thresher, a small prairie type of which was introduced east of the Rockies about 10 years ago, has effected immense saving of labor.

Increased Efficiency.—These powerful agencies in farm recovery are commonly overlooked. It is true that the gain accruing to agriculture as a whole from rapid technical progress is accompanied by loss and perhaps failure for individual farmers who cannot keep up with the advance. Increased efficiency resulting in an increased output per worker may necessitate a reduction in the number of farmers. Nevertheless, the effort to attain increased efficiency is inevitable and justified. While such effort may return a diminishing total reward as the percentage of efficient producers increases, the gain to the producer probably never vanishes altogether, and for the pioneers it is substantial. Progress in efficiency which causes production to

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keep pace with or to outstrip consumption calls for compensating adjustments in our agricultural system. But the proper course is to make these adjustments, not to slow up technical progress.

PENDING PROBLEMS

In general, the showing for 1927 was good. Yet much remains to be done before the position of the farmer will cease to constitute a problem. In order to achieve higher net incomes for agriculture, advance is necessary along several lines. While farmers themselves are reducing their costs of production through increased efficiency, public agencies should cooperate with them in effecting a better adjustment of production to demand. Also efforts should be made

to diminish waste, to lessen margins between producers' and consumers' prices, to reduce transportation and distribution costs, and to lessen the farmer's overhead charges by lowering or redistributing tax burdens and by improving agricultural credit facilities. Farmers should be encouraged to enhance their bargaining power through cooperative marketing, and the responsibility of the public in helping to reduce price fluctuations due to unavoidable gluts and shortages of agricultural products should be recognized in a practical manner. Overemphasis on the fairly satisfactory results of a single year may cause us to forget the existence of underlying causes of farm difficulty, and therefore to neglect practicable means of affording relief.

AGRICULTURAL LEGISLATION

By NELSON ANTRIM CRAWFORD

DIRECTOR OF INFORMATION, DEPARTMENT OF AGRICULTURE

FEDERAL

Corn Borer Control.—The most intensive campaign ever directed by a government against a crop pest was authorized by acts of the Sixty-Ninth Congress in February, 1927, for the control of the European corn borer. An appropriation of ten million dollars was authorized, to be expended by the Secretary of Agriculture in cooperation with states and other agencies. The reason for the passage of this legislation was the fact that the corn borer was moving rapidly westward into the extensive corn-growing regions, where it would do, if unchecked, untold damage to one of the country's principal crops. The appropriation was made conditional upon the passage of legislation by the states where the work was to be done, requiring the clean-up measures to be carried out. These states—New York, Pennsylvania, Ohio, Indiana, and Michigan—all passed the necessary acts.

A thorough campaign was carried on by the Federal and state authorities in the spring of 1927, with the result that the increase in number

of corn borers in the area was reduced to one-sixth of the normal increase. This result is regarded by agricultural authorities as gratifying. It is their opinion that the eventual spread of the corn borer to the entire Corn Belt is inevitable, but that consistent employment of control measures will largely avoid serious commercial damage to the nation's two-billion-dollar corn crop.

The appropriation made for control of the corn borer is effective until June 30, 1928, and the money still in hand will be used for further clean-up work, especially on bottom lands along rivers leading out of infested territory. The purpose will be to prevent long-distance spread of the borer. The long-time program for control of the pest embodies investigation, education, and quarantine measures, all of which may be carried out under other legislation.

Milk and Cream Importation.—Another important act passed in 1927 regulates the importation of milk and cream into the United States for the purpose of promoting the dairy industry of this country and protecting

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the public health. Under this act importation is forbidden except under a permit issued by the Secretary of Agriculture. An inspection system is provided for.

The act defines milk or cream as unfit for importation: (1) when all cows producing it are not healthy and have not been examined within one year previous to such milk being offered for importation; (2) when such milk or cream, if raw, is not produced from cows which have been tuberculin-tested by an official veterinarian of the United States, or of the country in which such milk or cream is produced, within one year previous to the time of importation, and found free from tuberculosis; (3) when the sanitary conditions of the dairy farms or plants where the milk or cream is produced do not score a prescribed minimum of points according to score cards used by the Bureau of Dairy Industry of the United States Department of Agriculture; (4) in the case of raw milk, when the number of bacteria exceeds 300,000 per cubic centimeter; in the case of raw cream, 750,000; in the case of pasteurized milk, 100,000; and in the case of pasteurized cream, 500,000; (5) when the temperature of milk or cream at the time of importation exceeds 50 degrees Fahrenheit. The importation affected by the act is largely from Canada to large cities in the United States.

Discrimination Prohibited. — Discrimination against farmers' cooperative associations by boards of trade and produce exchanges is forbidden by an act of Congress passed in March, 1927. These organizations are prohibited from excluding from membership or trade privileges representatives of cooperative associations of producers, provided these associations have adequate financial responsibility and agree to comply with the terms and conditions lawfully imposed on other members of the exchanges. Provision is made in the act for court process to compel admission of representatives of cooperatives and to recover damages from exclusion of them.

Dumping Forbidden.—Destruction or dumping of perishable farm prod-

ucts without sufficient cause is forbidden by another act passed in 1927. The law likewise prohibits fraudulent reports to the shipper concerning the handling, condition, quality, quantity, sale, or disposition of the products. The duty is imposed on the Secretary of Agriculture to provide by regulation for prompt investigation and issuance of certificates as to the quality of such produce received in interstate commerce upon application of anyone financially interested in the produce.

The McNary-Haugen Bill. — The McNary-Haugen Farm Relief Bill, the principle of which had long been a subject of controversy, was passed by the Sixty-ninth Congress, the vote in the Senate being 47 to 39, in the House of Representatives 214 to 178, but was vetoed by President Coolidge. The bill contemplated the disposal abroad of the surplus of certain agricultural products, with the expectation that the domestic price would thereupon rise to a satisfactory figure. The loss expected to be sustained on sales of a product abroad was to be covered by an equalization fee collected from the producers on all their sales of that product. Other means of stabilization of prices were also referred to in the bill. The products dealt with were wheat, corn, rice, swine, tobacco, and cotton. The plan was to be operated under the direction of a Federal Farm Board consisting of the Secretary of Agriculture *ex officio* and twelve members, one from each of the Federal Land Bank districts, appointed by the President from lists of eligibles selected by representatives of farm organizations.

In vetoing the bill, President Coolidge held that it was unconstitutional, discriminatory as to large groups of farmers, and unworkable, and that its effect would be to stimulate production and decrease consumption, thus aggravating the agricultural situation. The veto message was accompanied by an opinion from Attorney-General Sargeant holding the bill to be violative of the Constitution.

Numerous other measures for farm relief were proposed in the bills of-

GRAIN AND COTTON CROPS

ferred in Congress, but none was passed.

Crop Failure Relief.—An act was passed authorizing an appropriation of \$8,600,000 for the purchase of seed, grain, feed, and fertilizer to be supplied to farmers in areas of crop failure. The resolution actually making the appropriation, however, was lost in the filibuster in the Senate at the close of the Sixty-ninth Congress. The funds were to be used in Georgia, South Carolina, western Alabama, Florida, Louisiana, South Dakota, North Dakota, and Montana.

Seventieth Congress.—No important legislation dealing with agriculture had been enacted by the Seventieth Congress up to the time of going to press. The McNary-Haugen Bill, somewhat altered, had been again introduced, but not acted upon.

Legislation increasing the tariff on a number of agricultural products had been proposed in the House of Representatives, which had previously declined to consider a Senate resolution in favor of reduced tariffs.

STATE

Farm Taxation.—Among outstanding enactments by legislatures was the Indiana law intended to relieve farm land of an excessive burden of taxation. The act permits the State Tax Board to lower the appraisements on any class of property in any taxing unit.

Drainage of the Everglades.—The Florida legislature made provision looking toward the drainage of the Everglades, which are expected to prove of marked agricultural importance.

GRAIN AND COTTON CROPS

By W. F. CALLANDER

CHAIRMAN, CROP REPORTING BOARD, DEPARTMENT OF AGRICULTURE

PRODUCTION AND ESTIMATES

Increase.—Although the combined production of grain crops (in bushels) in the United States for 1927 was nearly 4 per cent larger than for 1926, the gross valued based on December 1 farm prices increased nearly 12 per cent according to the December estimates of the Crop Reporting Board of the Department of Agriculture issued December 19. The 1927 production was slightly above the five-year average from 1922-1926.

COTTON

Value of Crop.—A decrease in cotton production of 29 per cent was accompanied by an increase of 29 per cent in the value of cotton lint and cottonseed on the basis of December 1 farm prices. The combined value of cotton and grain crops for 1927 was about 16 per cent greater than for 1926.

The 1927 cotton crop in the United States was approximately 12,789,000 bales as compared with 17,977,000 bales in 1926. The farm price on December 1, 1927, was 19.6 cents per

pound, or nearly twice the price of 10.9 cents that prevailed on December 1, 1926. A considerable part of the 1927 crop was sold at the higher prices that prevailed during the early fall months.

Acreage.—The large cotton crop of 1926 with its very low prices, along with other factors such as the Mississippi River flood, resulted in a 15 per cent decrease in cotton acreage in 1927, or a decrease from 47,087,000 acres in 1926 to 40,168,000 acres in 1927. The five-year average 1922-1926 acreage of cotton was 40,932,000 acres. The 1927 yield per acre of lint cotton of 152.3 pounds was 17 per cent less than the 1926 yield of 182.6 and 2 per cent less than the five-year average of 155.8 pounds.

The 1927 production of cotton decreased 26 per cent from 1926 in the cotton states east of the Mississippi River and 31 per cent in the States west. The greatest relative reductions in cotton production ranging from 52 to 36 per cent were made in the marginal states of Missouri, Florida, Oklahoma, Virginia, and Ar-

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kansas. Only New Mexico, Alabama, Texas, Tennessee and Arizona succeeded in holding the 1927 production to within 75 per cent of the 1926 production.

The abandonment of acreage is estimated at 4.6 per cent of the estimated acreage of cotton in cultivation on July 1 as compared with an abandonment after June 25 of 3.4 per cent in 1926, and 3.5 per cent the ten-year average 1917-1926.

CORN

Crop Conditions.—The 1927 corn crop made a very poor start last spring. Planting was delayed and in some areas prevented by cold, wet weather during May and June. The weather during July and August was not particularly favorable for the crop, but unusually warm weather in September and October and the late frosts over most of the Corn Belt resulted in a production of corn that is actually above the average of the five years' period from 1922-1926. Not only is the crop 3 per cent larger than the 1926 crop, but the December 1 farm price was 72.3 cents per bushel or more than 12 per cent higher than the December 1, 1926, price of 64.2 cents. The value of this larger crop of 1927 corn on the basis of a higher December 1 farm price was 17 per cent greater than for the 1926 crop.

Production.—While there was an increase of 3 per cent in corn production for the country as a whole, there was a considerable shift in the areas of heavy production. There was a decrease of about 22 per cent in the Corn Belt States east of the Mississippi River, while in the western Corn Belt States there was an increase of 25 per cent in corn production. An increase of 3 per cent over last year's large production was shown in the eleven Cotton States. There was an increase of about 45 per cent over last year in the Rocky Mountain and Pacific Coast States and a decrease of 10 per cent in the North Atlantic States. About 69 per cent of the 1927 crop was produced in the 12 Corn Belt States as compared to 68 per cent in 1926.

Acreage.—The 1927 corn crop was

produced on an acreage of about 98,914,000 acres as compared with 99,713,000 in 1926 and 101,359,000 acres in 1925. This decrease in acreage was accompanied by a 4 per cent increase in yield per acre from 27.0 to 28.2 bushels.

Quality.—The quality of the 1927 corn crop is somewhat better than for the 1926 crop, about 75 per cent of the 1927 crop being of merchantable quality as compared with about 73 per cent a year ago and a ten-year average of about 81 per cent. The warm, dry weather of September and October and the late frosts were of material assistance in drying out the corn and improving the quality at harvest time.

Carry-over.—The carry-over of old corn on farms as estimated November 1 was approximately 111,000,000 bushels as compared with about 181,000,000 bushels in the fall of 1926 and 58,000,000 bushels in the fall of 1925. The 3 per cent increase in corn production this year is very nearly offset by this decrease in carry-over. As a result, the total supply of corn on farms is not much different from a year ago.

WHEAT

Crop Increase.—The 1927 wheat crop of 872,000,000 bushels was 5 per cent larger than the 1926 crop of 831,000,000 bushels and 8 per cent larger than the five-year 1922-26 average production. The acreage of all wheat was 58,853,000 acres as compared with 56,337,000 acres in 1926. There was little change in the average yield per acre for all wheat, with an average yield of 14.9 in 1927 and 14.8 in 1926. The average farm price of all wheat on December 1 was 111.8 cents as compared with 119.8 cents a year ago. The larger crop of 1927 was worth \$975,000,000 on the basis of the lower December 1 prices, as compared with \$996,000,000 for the 1926 crop.

Winter Wheat.—There was an increase of about 1,000,000 acres of winter wheat harvested in 1927 when 37,872,000 acres were harvested, as compared with 36,987,000 acres in 1926. The yield per acre of 14.6 bushels was somewhat lower than the

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1926 yield of 17.0 bushels. The production of winter wheat in 1927 was about 552,000,000 bushels, or 12 per cent less than the 1926 production of 627,000,000 bushels, and was about equal to the five-year 1922-26 average production of 556,000,000 bushels. The December 1, 1927, farm price of winter wheat of 116.8 cents was 4 per cent less than the December price a year ago of 121.2 cents.

Spring Wheat.—The production of all spring wheat, including durum increased over 50 per cent from 1926 to 1927. This increase in production was caused by a 7 per cent increase in acreage and a 47 per cent increase in yield per acre. The average in 1927 was 20,711,000 and the yield 15.4 bushels per acre with a production of about 319,000,000 bushels. The acreage in 1926 was 19,350,000 acres with a yield of 10.5 bushels per acre and a total production of about 204,000,000 bushels. The December 1 farm price of spring wheat at 103.2 cents per bushel was about 11 per cent less than the price of 115.7 cents on December 1, 1926.

Durum Wheat.—The production of durum wheat increased nearly 75 per cent from 1926 to 1927, as a result of a 10 per cent increase in acreage and a 57 per cent increase in yield per acre. The production of durum wheat in the four states of North Dakota, South Dakota, Minnesota and Montana was 76,000,000 bushels in 1927 as compared to 44,000,000 bushels in 1926 and a five-year average from 1922 to 1926 of 62,000,000. The acreage in 1927 was 5,271,000 and the yield per acre 14.4 bushels, while in 1926 the acreage was 4,774,000 acres and the yield 9.2 per bushels.

OATS

Reduced Acreage.—The oats acreage for 1927 of 42,227,000 acres was 4 per cent less than last year's acreage of 44,177,000. The yield per acre for the two years was practically the same, with 28.3 bushels per acre for 1927 and 28.2 bushels per acre in 1926. The production of oats in 1927 was about 1,195,000,000 bushels as compared with 1,247,000,000 in 1926.

Price.—The December 1 price of

45 cents was considerably higher than last year's price of 39.8 cents. The decreased production accompanied by a 13 per cent increase in price has resulted in a crop worth on the basis of December 1 farm prices, about \$537,000,000 as compared with \$497,000,000 for the 1926 crop, an increase of about 8 per cent in value. There was a decrease in production in most of the Corn Belt States east of the Missouri River, with the exception of Michigan and Iowa. There was a marked increase in production in the Dakotas and Nebraska. Texas and Oklahoma both show a sharp reduction in the production of oats.

OTHER GRAINS

Barley.—Barley, as with corn, presents the unusual spectacle of increased production, being accompanied by a substantial increase in price per bushel. The acreage in 1927 was estimated as 9,492,000 acres compared with 7,970,000 in 1926. Yields per acre this year averaged 28 bushels, compared with 23.2 bushels a year ago, resulting in production being raised from about 185,000,000 bushels in 1926 to 266,000,000 bushels this year, or an increase of about 44 per cent. The December 1 farm price per bushel advanced from 57.5 cents last year to 67.8 cents in 1927. The increased popularity of barley as a feed crop is attested by the fact that the acreage was increased in practically every state where grown.

Grain Sorghums.—Grain sorghums for all purposes in 1927 increased slightly in acreage and production over 1926. The production for grain shows an increase of less than 1 per cent, the total for 1927 being about 101,000,000 bushels and for 1926, 100,000,000 bushels. In sympathy with other grain prices the December 1 farm price per bushel advanced from 53.9 cents a year ago to 61.6 cents this year.

Rye.—The total production of rye for grain in 1927 was estimated at about 59,000,000 bushels compared with 41,000,000 bushels in 1926 or an increase of about 40 per cent. This increase was made on an acreage of 3,670,000 acres in 1927 and 3,578,000 acres in 1926. The 1927

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yield of 16 bushels per acre is much higher than the 1926 yield of 11.4 bushels per acre. Rye is another crop where increase in production is accompanied by an increased price, probably due in this case to a short European production and increased exports.

Rice.—The production of rice in the United States was about 40,000,000 bushels, while in 1926 it was 42,000,000 bushels. The five-year average was 37,000,000 bushels. This reduction was caused primarily by a reduction in acreage as yields were slightly larger. The December 1 farm price of rice of 93.8 cents was considerably lower than the price a year ago of 109.6 cents.

Flaxseed.—About 27,000,000 bushels of flaxseed were produced in 1927, or an increase of about 37 per cent over the 1926 crop of about 19,000,000 bushels. The acreage remained the same for the two years, but the yield per acre was 9.1 bushels for 1927 as compared with 6.7 bushels in 1926. The December 1 farm price

was 185.7 cents per bushel as compared with 194 a year ago.

Buckwheat.—The production of buckwheat in 1927 of about 16,000,000 bushels was an increase of 27 per cent over last year's crop of about 13,000,000 bushels. The acreage in 1927 was 832,000 acres and 694,000 in 1926. The yield per acre was 19.4 bushels in 1927 and 18.3 bushels in 1926. The December 1 price of 83.5 cents per bushel was somewhat less than the price of 88.2 cents a year ago.

FARM PRICES OF GRAINS

Index Numbers.—The monthly index number of the farm prices of grains for December 15, 1927, was 123 per cent of the pre-war average (August, 1909–July, 1914) of 100 per cent as compared with 120 per cent for December, 1926, and 140 per cent for December, 1925. This is an increase of 3 points since a year ago. The index number of grain prices increased from December a year ago to a high point in June, 1927, and has since declined to 120 in November. The changes in this index number are indicated by the following index number by months for the past year, December, 1926, 120, January 120, February 122, March 121, April 119, May 127, June 140, July 139, August 138, September 134, October 128, November 120, December 123.

Price Changes.—During the past year changes in corn prices have dominated the index number of grain prices. In December, 1926, the farm price of corn was 100 per cent of pre-war level. In April, 1927, it was 102 per cent, in May 114 per cent, June 138 per cent, July 144 per cent, August 152 per cent when the high point was reached, 148 per cent in September, 136 per cent in October, 115 per cent in November and 117 per cent in December. Farm prices of oats and barley increased to a high point and have subsequently declined. The farm price of rye also reached a high point in June, 1927, with a subsequent decline to November, with a rise in December. Grain prices on December 15 at 123 per cent of pre-war level were 14 points

PRODUCTION OF GRAIN CROPS AND COTTON IN THE U. S.

(Million bushels)

Crops	1927	1926	Five Year Average 1922– 1926
Corn ^a	2,786	2,692	2,766
All wheat	872	831	807
Winter wheat	552	627	556
Durum wheat ^b	76	44	62
All spring wheat ^c ..	319	204	251
Oats	1,195	1,247	1,352
Barley	266	185	192
Grain sorghums	138	138	121 ^d
Rye	59	41	64
Rice	40	42	37
Flaxseed	27	19	20
Buckwheat	16	13	14
Cotton lint (1,000 bales)	12,789	17,977	13,521
Cottonseed (1,000 tons)	5,678	7,982	6,004

^a Includes corn for all purposes, including that hogged off, cut for silage, and forage as well as that husked and snapped for grain, the yield per acre represents a grain equivalent applied to all corn and in some states is less than the yield for grain.

^b Four States of North Dakota, South Dakota, Minnesota and Montana only.

^c All spring wheat includes durum wheat.

^d Three-year average, 1924–26.

LIVESTOCK

below the general level of farm prices of 137 per cent, while a year ago grain prices stood at 120 per cent which was 7 points below the general farm price level of 127 per cent.

Purchasing Power.—The United States Bureau of Labor index number of wholesale prices of non-agricultural commodities for November, 1927, was 151 per cent of the pre-war level, making the purchasing, per unit of grains, 80 per cent of pre-war as compared with 75 per cent a year ago and 85 per cent in 1925. The purchasing power of all farm products per unit was 91 per cent for November, 1927, as compared with 80 per cent in November, 1926.

Cotton.—The farm price of cotton

made a phenomenal rise during 1927. The December 15, 1926, farm price of cotton was 81 per cent of the pre-war level. It continued at about 100 per cent or less until May when the new crop prospects began to have an influence on the price. There was a rise from 112 per cent on May 15 to 181 per cent for September, with a subsequent drop to 151 per cent in December. The farm price of cottonseed did not rise as high in September nor fall as low in December. The farm price of cottonseed for December 15, 1926, was 82 per cent of the pre-war level. It reached a high point of 170 per cent in November, 1927, and decreased slightly to 169 per cent on December 15.

LIVESTOCK

By E. W. SHEETS

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Rise in Profits.—For the first time since the World War it can be said that the livestock industry is faring as well as other branches of agriculture, and the outlook is generally favorable for next year. The hope of 1925 and the encouragement of 1926 have expanded at last in 1927 into realization of considerable profits for the stockman—particularly for beef cattle feeders. Beef cattle, in fact, are selling at the highest levels since 1920, and the spread between initial and final prices is unusually wide in the cattle-feeding business, over \$11 in some instances. Probably the principal reason for these prices has been the fact that receipts have been from 8 to 32 per cent lower than for corresponding periods a year ago. Furthermore, from all information available, there is to be considerable reduction in cattle feeding this winter compared with any of the last five winters. The range country is going into the winter with an abundance of feed, stock in excellent condition, and every evidence of optimism.

The cattle breeder is still awaiting the greater share of his reward

for the close culling and adding of new blood which he practiced during the lean years, and there are good prospects that his investments in purebreds will follow the upturn of the cycle and enhance in value during the next few years.

The hog market has been weak, with large receipts and low prices. It recovered somewhat after the middle of the year with a substantial rise about the middle of September due to a falling off in marketings. With a poor corn crop in many sections and a corn-hog ratio less favorable than a year ago for feeding or further expansion in hog breeding, it is anticipated that there will be heavy marketings for the early winter packing season.

Pork Production Contests.—On the whole, however, there are some very promising tendencies in the country's swine industry, notable among them being various State swine-production contests in which the ton-litter idea is being broadened and made applicable to all the sows on a man's farm. This new type of contest is practical to the last degree, inasmuch as it measures the total results of a farm-

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er's pork-production methods. Excellence in breeding and feeding methods, as well as strict sanitation in his hog lots, are necessary to win in such competition. A farmer in Iowa, which was one of the most successful States in sponsoring this new movement, produced 1,930 pounds of pork per sow from each of his eight sows in six months' time. The eight litters averaged 9.5 pigs, which averaged 204.4 pounds each at 180 days. This farmer produced this pork at a total cost of 7 cents per pound, including feed, labor charges, and cost of keeping the sows.

Sheep and Lambs.—There were 358,000 head, or approximately 9 per cent fewer sheep and lambs received at seven of the principal sheep markets from the first of June to the middle of September of the year 1927. Lamb prices averaged slightly under last year. Shipments of feeding lambs passing through markets into the Corn Belt States for the three months, July, August and September, were about 30 per cent smaller than for the same period in 1926, and, in fact, the smallest since 1922. To offset this, however, the indications are that double the number of lambs will be run in Western feeding areas this winter; Colorado, for example, feeding 700,000 head more. The entire livestock picture in the mountain States is a favorable one.

Beef Standards.—A noteworthy achievement in the meats end of the livestock industry was the inauguration on May 2, 1927, of a grading

and stamping service for prime and choice grades of beef, on a commercial basis. The service has been maintained at nine principal markets in the country, and up until the time that this is written more than 18,000 carcasses, totaling over 10,000,000 pounds of officially graded and stamped beef have been sold to the wholesale and retail trade. There is considerable demand for extension of the service to some of the lower grades of beef, and some indication that the good grade will be included in the near future. The inclusion of this grade would mean the stamping of four or five times the number of carcasses as are able to qualify for the two top grades.

Disease Control.—Material progress has been made in the betterment of the livestock industry through disease control. The campaign to eradicate tuberculosis from domestic livestock made unusual strides. The Federal appropriation of \$4,653,000 was supplemented by combined State appropriations of \$13,000,000. More than 9,700,000 were tested during the fiscal year ended June 30, 1927, an increase of 7 per cent over the preceding year. At the end of the fiscal year 347 counties were officially recognized as being virtually free from bovine tuberculosis, an increase of 149 counties over the number of the previous year. The steadily successful fight against the cattle tick in the South made substantial progress with a net gain of 12 counties and five parts of counties.

DAIRYING

By A. B. NYSTROM

BUREAU OF DAIRY INDUSTRY, DEPARTMENT OF AGRICULTURE

CONDITIONS

Progress.—The dairy industry made definite progress during 1927. This is shown in the general expansion of dairying into new territory, in the adoption of modern approved practices in the older dairy sections, and in the general interest which the public has taken in the use of dairy products. Although the extent to which this advancement has taken

place is difficult to determine, a few examples may be noted.

Fundamental Research.—Numerous investigations dealing with the relation of environment and the physiological condition of the animal to the secretion of milk and the amount and quality of its constituents have been conducted by the experiment stations. These include such subjects as the importance of

legume hays, vitamin requirements, protein and energy requirements, and mineral nutrition. Other investigations were on clarification, Pasteurization, sweet-cream butter, special cultures for cheese making, and other factors affecting the quality of dairy products. Much progress was made in these lines, and the work was reported as special publications of the experiment stations concerned.

Dairy Expansion.—Cheese factories, creameries, condensed-milk factories, and dried-milk plants are being constructed in the South. At the 1927 National Dairy Exposition held at Memphis, Tenn., October 15-22, the fact was forcefully brought out that the southern farmer is turning his attention to dairying.

Dairy instruction and investigations at colleges and experiment stations have been continued. Improvements in equipment and additions to staffs have been fairly general. New dairy buildings or barns have been erected or are under construction at the State agricultural colleges of North Carolina, Washington, Iowa, Oklahoma, Kansas, Illinois, Nebraska, and Louisiana.

The combining of smaller dairy manufacturing units into large organizations is still going on. During the year 8 large cheese producing and distributing companies were united to form the National Cheese Institute. The object of this organization is to obtain cooperation among producers, assemblers, manufacturers, and distributors of cheese. It will protect the interests of the cheese industry and will devote itself to increasing the consumption of cheese.

STOCK

A steady growth has taken place in the work of dairy-herd-improvement associations, formerly called cow-testing associations. The number of such associations in 1927 was 950 as compared with 835 in 1926. Besides weeding out poor cows and encouraging better feeding, these associations are proving dairy sires. By the end of 1927 about 400 purebred dairy sires were proved by comparing the production records of 5 or more daughters of these bulls with

the records of the dams of the daughters. In addition nearly 4,000 bulls have been partially proved by comparing the records of 4 daughters or less with the records of the dams of the daughters. About one-third of the bulls proved were unable to raise the production of their daughters above that of their dams. The other two-thirds have proved their ability to do this.

On August 9, 1927, Daisy Aggie Ormsby 3rd 571569, a Holstein cow then owned by Lakefield Farms, Clarkston, Mich., completed a year's official test with a production of 1,286.23 pounds of butterfat and 33,140 pounds of milk. This establishes a new United States record for butterfat, which was previously held by May Walker Ollie Homestead, whose yearly production was 1,218.59 pounds of butterfat.

MARKETING

Dairy Products.—A comparison of the production figures of 1925 with those of 1926, which are the latest yearly figures available, showed that in 1926 more butter, less cheese, less condensed and evaporated skim milk, more dried milk, and more ice cream were made than in 1925. The production figures of the first 9 months of 1927 as compared with the same period of 1926 showed practically no change in butter, a slight decrease in cheese, and a substantial increase in condensed milk.

In terms of whole milk, the nation consumed a billion pounds more milk in 1926 than in 1925. One half of this was a reduction in stocks, and the other half was imported as butter or cheese. To some extent this has resulted in increasing the price of butter, which averaged a few cents higher per pound for the year 1926 than for 1925. The per capita consumption of dairy products for these two years are as follows:

	1925	1926
Fluid milk (gals.)	54.75	55.30
Butter (lbs.)	17.39	17.82
Cheese (lbs.)	4.26	4.36
Condensed and evaporated milk (lbs.)	14.87	14.32
Ice cream (gals.)	2.80	2.77

Foreign Trade.—In 1926 butter imports were approximately 8 million pounds and exports were about 5½ million pounds, making a net import of about 2½ million pounds. Cheese imports in 1926 were nearly 78½ million pounds, whereas the exports were slightly less than 4 million pounds, leaving an import balance of 74½ million. The condensed and evaporated milk exports, on the other hand, were 114½ million pounds, the imports ½ million pounds, making a net export of about 114 million pounds. Considering all of the above products in terms of milk equivalent, there was a net import of 506,395,832 pounds of milk in 1926. Import and export figures for 1927, although not complete, show a tendency toward a somewhat greater import balance.

DAIRY SHOWS

Special dairy exhibits of excellent quality, including dairy cattle and dairy machinery were made in 1927 at the National Dairy Exposition, Memphis, Tenn., October 15 to 22; at the Waterloo Dairy Congress, Waterloo, Iowa, September 20 to October

2; at the Pacific International Livestock Exposition, Portland, Oregon, October 25 to November 5; and at the Pacific Slope Dairy Show, Oakland, California, November 14 to 19, 1927. In addition to these nearly all of the State fairs and many county fairs had extremely creditable dairy exhibits.

Students' contests in judging dairy cattle and dairy products were conducted in connection with many of the fairs and expositions. In the intercollegiate dairy cattle judging contest held each year at the National Dairy Exposition, 33 colleges were represented by teams of 3 students each. For the best team work in judging all breeds, Iowa State College won first place. First place in individual work in judging all breeds was won by Ted Lesh of Iowa. In judging dairy products, 14 colleges were represented. The team from Iowa State College won first place in judging all products, for the fourth consecutive year. In the individual products, Iowa was first in butter; Tennessee first in cheese; Massachusetts first in ice cream; and Kansas first in milk.

DISEASES OF PLANTS

BY R. J. HASKELL

ASSOCIATE PATHOLOGIST, DEPARTMENT OF AGRICULTURE

Cereal Crops.—Stem rust of wheat caused unusually heavy losses in the spring wheat states. It was estimated that in Minnesota, North Dakota, and South Dakota the losses were about thirty, twelve, and ten per cent of the crop respectively. On oats this rust was even more destructive than it was the season before. Leaf rusts of cereals, especially those on wheat and oats, started early and did considerable damage over the eastern two-thirds of the country. The bunt or stinking smut of wheat continued to cause heavy losses and reports of unusual damage from oat smut came from some of the South Atlantic States.

Vegetable and Field Crops.—The late blight and rot of potato, which

in some years is very destructive to eastern potato crops, started early and caused considerable loss in New England, the Middle Atlantic and some of the Lake States. The virus diseases of potato, such as mosaic, leaf roll, spindle tuber and others, continued to take the heaviest toll from the potato crop and it is toward these that the most experimental work is being directed. A new potato disease of unknown cause, but associated with an insect (psyllid) decimated the Utah potato crop in 1927. The growers are much concerned and the pathologists of Utah and neighboring states are devoting much time to the study of its control.

Bacterial canker, a destructive disease of tomatoes, has been found to

be more widespread than was heretofore realized. This year it was reported for the first time from Georgia and Utah where it was the cause of much loss. Downy mildew of watermelon was unusually prevalent in Arkansas and Missouri. In the West many more plants, among which are included several vegetables, were found to be subject to the attacks of the virus that causes curly-top of sugar beets. As usual curly-top was a very important disease of sugar beets.

Fruits.—Favored by wet weather in Eastern United States, apple diseases were prevalent and played an important part in bringing about the reduced crop and resulting high prices. Apple scab was unusually common in the East except in certain Allegheny Mountain sections. Fire blight was one of the few apple diseases that seemed less severe than usual. Peach leaf curl was bad in many eastern sections and the baffling peach yellows appeared in one new state and in others where it has not been seen for years. Leaf spot of cherry was very generally prevalent and greatly injured many trees through defoliation. Cranberry false-blossom was reported to be spreading rapidly in Massachusetts and causing considerable worry to growers. A new bacterial disease of strawberry was found in Utah and two new leaf spots of pecan were reported from Georgia.

Trees and Ornamental Plants.—At least two diseases of trees new to

this country were reported during the year. One was a canker of larch which also attacks Douglas fir, in Massachusetts, and the other was a scab disease that was found attacking the smaller branches, twigs and leaves of willows in Connecticut. The anthracnose diseases of oak and sycamore were unusually severe in parts of the country. The most reports were received from Iowa and Northeastern States. A new leaf mold disease of sweet pea was reported from greenhouses in Massachusetts and New York and a new cosmos canker from Iowa.

Plant Quarantines.—No new quarantines aimed against plant diseases were promulgated. The narcissus bulb quarantine was revised April 15 to modify slightly the conditions of interstate movement of bulbs and the white pine blister rust quarantine, regulating the movement of five-leaved pines and currant and gooseberry plants, was revised to make the requirements clearer.

Meetings.—The American Phytopathological Society held the following meetings during the year. (1) Summer field meeting in northern Ohio, August 16–19; (2) Western Division at Reno, Nev., June 23–24; (3) Canadian Division at Winnipeg, Can., in December; (4) Joint meeting with the Southern Division at Nashville, Tenn., December 28–30. The Northwestern Association of Horticulturists, Entomologists, and Plant Pathologists met at Moscow, Idaho, and Pullman, Wash., June 27–29.

DISEASES AND PESTS OF ANIMALS

By JOHN R. MOHLER

CHIEF, BUREAU OF ANIMAL INDUSTRY, DEPARTMENT OF AGRICULTURE

Favorable Livestock Conditions.—The year 1927 was marked by favorable conditions, for the most part, in the production of domestic animals in the United States. Although other countries of the world have many serious livestock diseases from which this country is fortunately free, none of those maladies gained entrance. As a consequence live-

stock sanitary officials and practicing veterinarians were able to devote their full energy to the eradication and control of diseases and pests normally present in the United States.

Control of Disease.—There has been gratifying progress especially in the eradication of bovine tuberculosis, in the control of hog cholera, and in the suppression of ticks which

transmit cattle fever, sometimes known as Texas or splenetic fever. The control of intestinal worms of swine, which in the past have caused exceedingly heavy losses in important hog-raising areas, made excellent progress through an increasing adoption of a swine-sanitation system. Extensive dipping of cattle and sheep, especially in the western states, has resulted in material progress in the control of scabies which is caused by mites affecting those species of animals.

Tuberculin Testing.—In cooperative testing for the eradication of tuberculosis the inspection force has been testing close to a million cattle a month. More than 1,000 counties have either completed or are engaged in the tuberculin testing of all cattle within their boundaries. This activity thus applies to about one-third of all counties in the United States. As a result of this extensive drive against the most serious livestock disease the extent of tuberculosis has decreased materially as shown both by field surveys and post-mortem examinations by the Federal meat-inspection service.

Hog Cholera.—The loss from hog cholera during 1927 was materially less than during the preceding year. One explanation is found in the very large output and use of the protective hog-cholera serum. When properly administered this biological product makes hogs immune to the disease. The output of the serum during the year was approximately 50 per cent more than in any previous year.

Eradicating Ticks.—There is excellent sentiment in most southern states for a speedy eradication of cattle-fever ticks which for so many years have retarded the best development of the livestock industry in the United States. States along the Atlantic Coast line as far south as Florida have won the fight against this pest and have been released from Federal quarantine. Excellent prog-

ress has been made in several other southern states. The floods occurring in the Mississippi Valley also were helpful in eradicating cattle ticks by reason of large deposits of silt which destroyed enormous numbers of the destructive parasites.

Parasites.—A recent appraisal of losses caused by animal diseases and parasites indicates that the latter are probably taking a heavier toll than stockmen realize. Unlike infectious diseases, parasites often cause injury without alarming suspicion or causing symptoms noticeable to the stock owner. Among the more important parasitic pests which have been troublesome during the year are nodular worms, liver flukes, kidney worms, stomach worms, roundworms, tapeworms, and lung worms. Besides inflicting injury by sucking blood and causing pain and irritation which interfere with the animals' rest and feeding, some parasites also produce poisons. Others injure the flesh and tissues sufficiently to allow bacteria to enter. In still other cases the accumulation of parasites themselves in the body may be so great as to prevent the proper functioning of such parts as the lungs, kidneys, or alimentary canal.

Sanitation.—Livestock owners can protect themselves in large measure against the inroads of destructive diseases and parasites by improving the sanitary condition of their premises and by the use of dips and disinfectants. Owing to the wide variety of diseases and pests it is not feasible to point out details of methods. Such particulars are well known to trained veterinarians and may be obtained also in free publications issued by the various state experiment stations and the U. S. Department of Agriculture. A vigorous war on the livestock enemies mentioned generally results in more rapid and satisfactory development of young animals and better returns when animals or their products are marketed.

MARKETING

BY A. W. MCKAY

MARKETING ECONOMIST, DEPARTMENT OF AGRICULTURE

WEATHER AND CROPS

The marketing situation in agriculture is colored from year to year by weather conditions and crop yields. High yields and generally increased planting in 1926 resulted in lowered prices and marketing difficulties.

Acreage and Production.—In 1927 the acreage of principal crops was increased slightly, but yields were 2.1 per cent lower than the preceding year, although 2.5 per cent above the average of the last ten years. Gross production of 17 principal crops in 1927 was 2.2 per cent less than in 1926, but 3.3 per cent in excess of the average production of the last 10 years.

Crop Values.—The total value of 50 crops in 1927 is estimated as \$8,428,626,000, compared with \$7,793,480,000 for the same crops in 1926. Cotton showed the greatest increase in value, \$330,714,000, while corn is estimated to have returned \$285,268,000 more to the producers than in 1926. Potatoes showed a decline in value of \$113,147,000, the greatest loss reported for the year, whereas wheat, hay, apples, and peaches, according to the estimates, are each valued at from 10 to 30 million dollars less than in 1926. These estimates are based on prices current on December 1.

Prices.—With a few exceptions, prices to producers for important products were higher in November, 1927, than they were a year before. Cotton prices at local markets averaged 20 cents per pound in November, 1927, compared with 11 cents for the same month in 1926; corn was 77 cents per bushel higher; oats, 5.3 cents higher; and beef cattle were higher by \$1.68 per 100 pounds. Potatoes, however, were 45.9 cents per bushel lower in November, 1927, than during November, 1926; wheat was 13.2 cents per bushel below the price of the previous year; while prices paid producers for hogs averaged \$2.46 per hundredweight less. Prices

of all dairy products were approximately the same as in 1926 with a summary of the two years probably showing some advances in 1927. Poultry products over the season registered somewhat lower in 1927 than in 1926. On the whole prices for agricultural products were better in 1927 than during the preceding year, while lower prices for nonagricultural commodities further served to increase the purchasing power of farm products which was 92 per cent of pre-war years, (August, 1909, to July, 1914) in September and October, and 91 per cent in November, compared to an average of 85 for the year 1926.

MARKETING SURPLUS PRODUCTS

Discussion.—The problem of the disposal of surplus crops has not been as acute during the past year as in 1926. Nevertheless, it continues to provoke much discussion throughout the country, and several bills designed to ameliorate marketing conditions have been introduced in the session of Congress which convened December 1. Proposals favored by many Middle-West farm leaders, in brief, provide for the export of surplus products, losses on the exported surplus to be met by a fee levied on the sale, transportation or processing of that portion of the crop which enters into domestic consumption.

Cooperative Associations.—Secretary of Agriculture Jardine considers the organization of large-scale cooperative associations as the most fundamental step which farmers can take to meet the surplus problem and improve general market conditions. The Secretary's position may be summarized as follows: Coordination of production and marketing and the intelligent adjustment of production to market demand are essential to any permanent improvement in marketing. Large-scale cooperative associations can (1) develop comprehensive production programs and edu-

cate their members to produce in accordance with these programs; (2) make important savings in handling, processing, warehousing and marketing costs; (3) improve merchantability of farm products through standardization, and improvements in packing, processing and handling practices; and (4) distribute farm crops systematically in accordance with demand, because of their ability to employ the best merchandising talent and make use of crop and market information and the results of research work in marketing. A program of this kind, the Secretary believes, will be a permanent contribution to the welfare of agriculture, and he is favorable to any legislation which would assist the farmer in meeting his marketing problems through the development of his own marketing organizations.

MARKETING POLICIES AND PRACTICES

Trend to Centralized Control.—Changes in marketing policies and practices throughout the year have not been revolutionary, but rather have been indicative of an evolutionary development. Generally, this trend is toward more centralized control of marketing and marketing facilities, the more direct movement of products to consumers, and reductions in marketing costs.

Produce Clearing Houses.—The trend toward centralization in marketing is exemplified by the agitation for the development of produce "clearing houses" during 1927. Growers and shippers of grapes and Gravenstein apples in California, of prunes in Eastern Washington and of potatoes on the Eastern Shore of Virginia have operated various forms of clearing houses during the year. Similar organizations have been proposed for Florida citrus fruit, northwestern apples, California prunes and other products. The objectives of all these plans are to promote more orderly marketing. Lack of experience in actual operation, however, has made somewhat obscure the methods by which the proponents of clearing houses hope to reach their objectives. Many of them propose the collection,

summarization and distribution of market information by a central office. In this respect they are comparable to trade associations in industry.

Virginia and California.—The plan operated on the Eastern Shore of Virginia during the season of 1927, was featured by the employment of a "quotations committee" which announced from time to time a minimum f.o.b. price for No. 1 potatoes shipped from the district. This quotation was changed by the committee as often as changes in supply or demand made an adjustment in price necessary, and presumably all members of the clearing house were guided by the committee's quotations in making sales to their customers. The California grape clearing house, on the other hand, attempted to influence shipments by dissemination of market information and by frequent conferences with regional committees of shippers. Those in touch with conditions on the Eastern Shore of Virginia and in the California grape districts believe that the clearing houses operated in those sections have been beneficial.

Direct Sales.—Efforts to establish more direct contacts with consumers of agricultural products are seen in sales of cotton by cooperative associations direct to mills. A major percentage of the cotton handled by the association is now sold in this way. In the livestock industry "direct buying" and "direct sales" continue to attract attention. Differences of opinion exist regarding the value of direct shipment and sale to packers as compared with sale through the terminal stockyards. However, a number of cooperative associations and other shippers claim that reduced cost and greater net returns for uniformly graded stock may be obtained in this way.

The direct sale of range cattle and lambs to feeders in the Corn Belt states is another development which has been promoted by the terminal cooperative associations. During 1927, approximately 16,000 head of cattle and 68,000 lambs were shipped direct from the range to feed lots in the Middle West. Reduced handling costs and livestock of higher quality are

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the principal advantages claimed for this method.

Miscellaneous.—Other developments during 1927 include the inauguration of a meat grading and stamping service by the U. S. Department of Agriculture which gives consumers in the few cities in which the service was established experimentally Government certification of meat grades. Studies of cotton utilization carried on by the Department in cooperation with associations of cotton manufacturers mark the development of a campaign to discover and promote new uses for cotton. The further development of shipment of milk in glass-lined tank cars and tank trucks and long distance shipment of cream has tended to widen the area from which milk supplies may be drawn, and is causing some uneasiness in established dairy sections about the larger cities.

COOPERATIVE MARKETING

Educational Work.—Developments in cooperative marketing in 1927 were featured by an increasing interest in educational work. The American Institute of Cooperation held its third annual session at Northwestern University in July, and offered a four-week program prepared especially for managers and directors of cooperative organizations, agricultural high school teachers and students of agricultural economics. Several short-term schools of cooperative marketing were held by state agricultural colleges with the assistance of specialists from the United States

Department of Agriculture and officials of leading associations. In addition, Colorado and Wisconsin undertook to carry out programs for adult instruction in the principles and practices of cooperation.

Cooperation, therefore, is becoming a medium through which farm people are receiving instruction in the economics of their industry. The point of view expressed in the development of educational programs is a radical departure from the thought of many cooperative leaders five years ago. At that time business efficiency and a binding contract between the association and its members were believed by many to be sufficient to insure the success of cooperative ventures.

Agricultural Trades of America.—On the business side, there is every indication that cooperative organizations are taking up the slack in marketing. That the competition of cooperative associations is being felt by private agencies is evidenced by a meeting held in Chicago in November which resulted in the formation of an organization known as the Agricultural Trades of America. The purpose of this organization, according to announcements, will be to combat encouragement of cooperative marketing by the Division of Cooperative Marketing and other Governmental agencies, and to obtain the repeal and prevent the passage of legislation which places private handlers of farm products at a disadvantage as compared with the producers' organizations.

HORTICULTURE

By WILLIAM A. TAYLOR

CHIEF, BUREAU OF PLANT INDUSTRY, DEPARTMENT OF AGRICULTURE

FRUITS

Apple Production.—In the field of fruit production there are certain features that are outstanding. The commercial apple crop of 1927, estimated at approximately 24,000,000 barrels, contrasted sharply with the crop of 1926 which was more than

39,400,000 barrels, with a 5-year average (1921-1925) of about 30,000,000 barrels. The 5-year average for 1922-1926, which omits the very small crop of 1921 and includes the very large crop of 1926, is approximately 33,400,000 barrels.

Peaches.—Production in 1927 may

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be regarded as a fair average yield with an estimated crop of approximately 46,000,000 bushels. This followed the excessively large crop in 1926 of approximately 68,400,000 bushels with large quantities reported as remaining unharvested. The 5-year average (1921-1925) is approximately 46,900,000 bushels. Following the disastrously large crop of 1926, the growers in Georgia, where the heaviest crop congestion occurred, took radical steps to eliminate many trees of certain varieties in certain sections which had proved to be economically unprofitable. This was a notable event in view of the fact that probably at no previous time has there been a concerted, organized effort on the part of a fruit industry in this country to meet a crop situation by the prompt destruction of a large number of trees.

Other fruits in 1927 were in fairly good balance as between supply and demand, except that the yields of prunes and vinifera grapes on the Pacific Slope were in excess of the consuming demand at prices remunerative to the growers.

MARKET STANDARDIZATION

The year saw good progress in the further advancement of the standardization of grades in the marketing of fruits and vegetables, and in the development of official inspection of shipments, both at points of origin and at market destinations. Market grades for the more important fruits and vegetables have been worked out, or earlier grade standards which had been used were revised and generally adopted by the trade.

ORNAMENTAL HORTICULTURE

Organizations and Growers.—In various fields in ornamental horticulture there has been an acceleration of interest as indicated by a perceptible increase in the number of flower shows both of urban and rural staging, the formation of garden clubs, and other similar organizations of amateur interests. There has been an increase in the number of amateur and semi-professional flower growers who are doing breeding work,

or are otherwise developing seedlings of their own,—in many instances with considerable promise of some of these seedlings proving of commercial value. There is a widespread interest in, and increasing demand for, information in regard to methods of plant propagation.

Bulb Production.—An advance should be noted in the establishment of a commercial bulb production industry. The relative value of American-grown narcissus and tulip bulbs, both for outdoor planting and for forcing, compared with imported bulbs, has been established favorably for the American-produced material when properly grown and handled. The practical possibility of producing bulbs of various lilies which heretofore have either not been grown at all, or produced only from imported stocks, seems to have passed the experimental stage as to possibilities of production.

Ornamentation.—In a number of states there has been a pronounced stimulation of interest in the ornamentation of rural home and school grounds, community building sites, and other similar places. This has extended to the villages and small towns, but it is especially marked with respect to rural surroundings.

NURSERY INDUSTRY

Decorative Trend.—Partly in line with the trends indicated in the foregoing paragraphs, but also as a reflection of a general and widely developed activity, many nurserymen have either materially increased their propagation of ornamental trees, shrubs, and other decorative plants, or they have taken up the growing of this type of material where formerly they gave little or no attention to its production. It is believed that this is also due in part to certain influences at work that have stimulated the use of American-grown ornamental plants.

Less Dependence on Foreign Supplies.—The trend towards the more extensive production and utilization of American-grown seedling fruit tree stocks produced from both domestic and imported seed supplies is notice-

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able and is rather marked. While there has been no culminating feature during the year, the conviction has become well fixed in the minds of many that the American nursery and fruit industries can maintain themselves and advance independently of foreign supplies of most fruit stocks. The same thing is measurably true with respect to rose stocks and some other woody ornamentals.

VEGETABLE PRODUCTION

Salad Crops.—In very recent years there has apparently been a decided increase in the consumption of certain leafy vegetables such as lettuce, endive, spinach, Chinese cabbage, and other salad crops. The localized production of some of these crops, especially lettuce, in some parts of the Pacific Coast is rather striking. The past year has perhaps seen this centralization of production more definitely established than formerly and becoming more highly specialized. The development of lettuce production on the Pacific Coast, and particularly in southern California, as a winter crop has had its influence on the production of lettuce as a winter greenhouse crop in some parts of the East. The growing of tomatoes and some other vegetables as winter crops in Florida, southern Texas, Cuba, and certain parts of Mexico, is nearly as striking a development in recent years as the development of lettuce growing in the Imperial Valley in California.

Canning Crops.—A broadening interest in canning crops is a feature in vegetable production. While less tangible than some of the other developments, the fact that several State Experiment Stations and one or more national commercial organizations are active in this field is indicative of the trend.

SPRAY RESIDUES ON FRUITS AND VEGETABLES

Health Protection.—The increasingly numerous and heavy applications of insecticides and fungicides which have been found necessary to protect fruits and vegetables against plant diseases and insect pests under some producing conditions have, in the recent past, developed a difficulty with respect to the protection of human health which has been a matter of considerable concern during the past year. This has been especially true of the production of apples and pears in some of the semi-arid producing districts of the country, particularly on the Pacific Coast, where it has been found necessary to develop methods of cleansing these products from excessive spray residues before shipping them to market.

Cleansing Problem.—The development of effective cleansing methods has necessitated much intensive experimental work by the Federal Bureaus of Chemistry and Soils, Entomology, and Plant Industry, in close cooperation with the producing and distributing organizations of the territory affected. While it cannot be said that complete success has been attained, by far the larger part of the Western crop of apples and pears in 1927 was satisfactorily cleansed to a condition suitable for domestic and export shipment and consumption, with relatively little impairment of transportability and keeping quality of the product. The matter is one which requires the perfecting of machinery which will, at the same time, insure thorough cleansing of the product and be economical to operate with a minimum of break-downs and delays in the orderly progress of the product through the packing houses where they are prepared for shipment.

FISHERIES OF THE UNITED STATES

By LEWIS RADCLIFFE

DEPUTY COMMISSIONER, U. S. BUREAU OF FISHERIES

The Industry.—In 1926, the fish-ery industries experienced one of the most successful years in the history of the industry. In general, condi-

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tions have not been so wholly favorable during 1927. The pack of canned salmon in Alaska is approximately 46 per cent less than 1926, and 20 per cent under 1925. The rapid development of fresh fish packaging has affected the market situation in certain areas and necessitated a general readjustment in the fresh and frozen fish trade. The New England vessel fisheries on the other hand have landed larger catches than at any period in the history of the fishing industry. On the whole, 1927 has been marked by noteworthy progress in the development of improvements in the methods of handling, distributing and merchandising of fresh and frozen fish. Particular attention has been given to the more rapid freezing of fish by the use of cold brines and in the improved installation of refrigeration machinery on the fishing vessels.

The fisheries and fishery industries of the United States and Alaska employ about 190,000 persons; the investment approximates \$210,000,000; the catch of fish and fishery products exceeds three billion pounds for which the fishermen receive about \$109,000,000.

New England Vessel Fisheries.—The total landings of fish by American fishing vessels at Boston and Gloucester, Mass., and Portland, Maine, in 1926 were the largest on record, exceeding 238,400,000 pounds with a value of \$9,068,000 to the fishermen. The most important species were haddock 94,000,000 pounds valued at \$3,082,000; cod 78,000,000 pounds valued at \$2,600,000; mackerel 36,000,000 pounds valued at \$1,400,000; and, halibut 3,400,000 pounds valued at \$670,000. During the first nine months in 1927, the landings were 20,000,000 pounds greater than for the same period in 1926. The increased volume of trade is chiefly due to the increased sales of haddock and other fish in package form, and the larger catches of mackerel. Fresh fish skinned and boned, wrapped in parchment paper, and packaged in twenty to sixty pound containers, is more readily handled by the grocery trade than bulk fish and appears to have met with a ready

reception by the American housewife.

Frozen Fish.—The amount of fish frozen annually in the United States approximates 100,000,000 pounds. Among the important species frozen are halibut, salmon, ciscoes, lake trout, mackerel and whiting. The average monthly holdings during 1926 approximated 46,000,000 pounds. Over 30 per cent of the fish frozen are from the Pacific Coast, 27 per cent from New England, and 20 per cent from the Middle Atlantic States. Under the new systems of brine freezing, it is possible to freeze fish more rapidly and to produce a product scarcely to be distinguished from the fresh fish. Important developments have been made in this field during the year in adapting the new principles to large scale operation.

Canned Fish.—The chief methods of preserving fish are by canning, salting, smoking, and drying. In 1926, the output of canned fishery products was valued at \$86,000,000. Of this total canned salmon represented 65 per cent, sardines 17 per cent, tuna 6 per cent, the remaining 12 per cent including oysters, shrimp, clams and miscellaneous products. The United States and Alaska pack of salmon in 1926, was 359,453,760 pounds valued at \$56,219,000. Of this amount 319,200,000 pounds were packed in Alaska. Preliminary figures indicate that the total pack for 1927, will be very much smaller, the pack of Alaska approximating 160,272,000 pounds. The pack of sardines in Maine approximated 42,938,000 pounds; sardines in California, 100,477,344 pounds; the tunas in California, 20,429,000 pounds; shrimp in the South Atlantic and Gulf States, 10,981,100 pounds; oysters, 6,207,510 pounds.

Fishery By-products.—In 1926, the output of fishery by-products was valued at \$12,133,000 as compared with \$14,600,000 in the preceding year. There were included in this total 10,888,046 gallons of fish oils, including whale, valued at \$5,027,491; fish and whale scrap and meal, and shrimp bran, valued at \$3,651,077; 308,670 tons of poultry grit and lime from ground oyster and clam

shells, valued at \$2,588,416; and, 520,622 gallons of fish glue valued at \$732,109.

Fisheries Conservation.—The more general appreciation of the danger of complete depletion of many of the most important commercial fisheries has brought conservationists, fishery interests and legislators to the realization that the scientific control of our fisheries or the application of rational methods of fish husbandry is necessary to safeguard this resource of increasing importance to the nation. Excellent progress is being made in the studies of the great salmon fisheries of Alaska and except for abnormal conditions which obtained in 1927, the investigations have reached a stage which will enable the investigator to forecast the size of future years' runs with a considerable degree of accuracy. Oyster culture is being placed on a firmer foundation by applying the results of scientific research to the business. Notable progress has also been made in the conquest of fish diseases which have seriously curtailed the output of the many fish hatcheries scattered throughout the country. These investigations in fish pathology and experimental fish culture have gone far to increase the effectiveness of hatcheries and may eventually place the farming of fish in ponds upon a successful and lucrative basis.

At present fisheries research aimed at determining the condition and trend of our fisheries is largely centered in the U. S. Bureau of Fisheries. The present personnel and appropriations are so small as to make it impossible to study all of our important fisheries and determine what things should be done properly to husband them. Greater appreciation by Congress of this work and more effective cooperation with the States has made possible a considerable expansion.

Fish Propagation.—The output of food and game fishes by the U. S. Bureau of Fisheries for the fiscal year 1927, exceeded 6,481,000,000, representing the greatest output in any year since the Bureau began fish-cultural work. Increased collections of four species—cod, haddock, pollock

and winter flounder—are largely responsible for the increase of over one billion more than the output the previous year. The output of commercial marine species was 5,473,000,000 fry and eggs; of the commercially important Pacific salmon 120,213,000; of the commercial species of interior waters 548,535,000. The game fishes were represented by 51,523,000 trout and salmon, and 36,222,000 warm water pond species such as bass, sunfish, crappie, etc.

The Bureau furnished the States 84,586,000 eggs and distributed 2,227,000 eggs and 19,500 fish to five countries, Canada, Costa Rica, Italy, Switzerland and Japan. The Bureau has continued to cooperate with fish and game organizations interested in establishing cooperative fish nurseries. Under this arrangement the private organization provides the equipment and care of the fish in most cases, and the Bureau inspects proposed sites and acts in an advisory capacity in directing the work. For trout nurseries, it furnishes trout fry. At the end of the season when the fish are planted the Bureau reserves the right to fifty per cent of the stock for filling outside applications in that region. Under this arrangement it is possible to grow a larger number of juvenile fish and to make a saving on transportation costs. During 1927, about 60 cooperative organizations were in operation and a considerable number of new applications have been received.

Alaska Fur Seals.—The Pribilof Island fur-seal herd which is under the jurisdiction of the Department of Commerce, Bureau of Fisheries, now numbers about 800,000. There are killed annually about 25,000 seals. These are sold at public auction at St. Louis, Mo. At the sale held on May 23, 1927, 11,611 black dyed, 1,526 logwood brown dyed and 91 faulty skins, a total of 13,228, were sold for government account at a gross price of \$436,566.20. At the second sale held on October 3, 1927, there were sold 10,333 seal skins taken on the Pribilof Islands and 132 Japanese seal skins received under treaty agreement, the total amount received being \$339,392. In

addition, there were sold 580 blue and 20 white fox skins.

International Relations.—Under the terms of the convention with Great Britain, ratified October 21, 1924, provision is made for an international fisheries commission, whose duty it is to have made a thorough investigation into the life history of the Pacific halibut and to make recommendations as to what regulations are deemed necessary for the preservation and development of this fishery. The scientific staff has progressed rapidly with its investigations during the year and has shown that the fish supply is in grave danger of exhaustion, particularly on the Southern or older banks. The annual catch exceeds 50,000,000 pounds for which the fishermen receive about

\$7,000,000.

The fisheries convention with Mexico, ratified on March 18, 1926, was terminated on March 28, 1927, on the initiative of the U. S. Government.

The North American Committee on Atlantic Fishery Investigations, composed of delegates from Canada, Newfoundland and the United States, held two sessions during the year—one at Washington, D. C., on April 28, 1927, and the other at Toronto, Canada, on October 19, 1927. Records of the catches of cod from the banks of the Northwestern Atlantic show that for the past forty years the catch has been about one billion pounds annually. Other important fisheries which are the subject of special studies are the mackerel and had-dock.

COGNATE SOCIETIES

AMERICAN FORESTRY ASSOCIATION.—1523 L. St., N. W., Washington, D. C.

AMERICAN FARM BUREAU FEDERATION.—58 E. Washington St., Chicago, Ill.

AMERICAN FISHERIES SOCIETY.—2273 Woolworth Bldg., New York, N. Y.

AMERICAN FORESTRY ASSOCIATION.—522 Fifth Ave., New York, N. Y.

AMERICAN GAME PROTECTIVE ASSOCIATION.—233 Broadway, New York, N. Y.

CROP PROTECTION INSTITUTE.—21st & B. Sts., Washington, D. C.

FARMERS' NATIONAL COUNCIL.—Bliss Building, 35 B. St., N. W., Washington, D. C.

FARM WOMEN'S NATIONAL CONGRESS.—Clarksville, Iowa.

INTERNATIONAL FARM CONGRESS OF AMERICA.—Continental Bldg., Kansas City, Mo.

INSTITUTE OF AMERICAN MEAT PACKERS.—46 Cedar St., New York, N. Y.

JEWISH AGRICULTURAL SOCIETY, INC.—301 E. 14th Street, New York, N. Y.

MIDDLE ATLANTIC FISHERIES ASSOCIATION.—Bridge Arch No. 11, New York, N. Y.

NATIONAL AGRICULTURAL SOCIETY.—Hartford, Conn.

NATIONAL BOARD OF FARM ORGANIZATION.—1731 I. St., N. W., Washington, D. C.

NATIONAL COOPERATIVE MILK PRODUCERS' FEDERATION.—1731 I. St., N. W., Washington, D. C.

NATIONAL HIGHWAYS ASSOCIATION.—18 Old Slip, New York, N. Y.

NEW YORK PRODUCE EXCHANGE.—2 Broadway, New York, N. Y.

SOCIETY OF AMERICAN FLORISTS AND ORNAMENTAL HORTICULTURISTS.—247 Park Ave., New York, N. Y.

SOCIETY FOR THE PROMOTION OF AGRICULTURAL SCIENCE.—Department of Agriculture, Washington, D. C.

SOCIETY OF AMERICAN FORESTERS.—930 F. St., N. W., Washington, D. C.

WOMAN'S NATIONAL FARM AND GARDEN ASSOCIATION.—26 E. 35th St., New York, N. Y.

WORLD AGRICULTURE SOCIETY.—Amherst, Mass.

DIVISION XII

MINERAL INDUSTRIES

MINING AND ORE DRESSING

BY CHARLES E. LOCKE

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MINING INDUSTRY

General.—The year 1927 was one of moderate activity in the mining industry with generally low prices for metals, but nevertheless showing considerable advance in the art. A good illustration of the general character of the year is the tonnage of iron ore shipments from the Lake Superior mines which amounted to 49,110,133 long tons in the first ten months as compared to 54,568,682 tons in 1926, and a still greater tonnage in some previous years. In America it seems to be about the tail end of the post-war deflation period, while in Europe the countries are still in the recovery stage.

Prices.—Average monthly prices for the first ten or eleven months of the year show: silver around 55 to 57 cents per ounce; copper ranging from a low of 12.370 cents per pound to a high in November of 13.319 cents; lead in New York at 7.577 cents in January and 6.250 cents in October; zinc in St. Louis highest in March at 6.692 cents per pound and lowest at 5.745 cents in November; tin in New York, high at 67.833 cents in March and low at 57.089 cents in November; quicksilver increasing from \$101.200 per flask of 75 pounds in New York in January to \$126.200 in October; refined platinum dropping in New York from \$109.520 per ounce in January to \$72.00 in October; aluminum, the price of which is closely controlled, lowered from 26.27 cents per pound in January to 25.60 cents in October; basic pig iron highest at \$20.49 per ton in April and lowest at \$18.76

in October. There seems to be no indication of a general upward tendency in metal prices and the prospects for increased profits from mining next year are correspondingly small. The one encouraging feature is the growing European demand.

Copper and Lead.—Copper is suffering from a productive capacity in excess of consumptive needs and an impending increase in production from new copper districts. The satisfactory functioning of the Copper Export Association, the formation of a Copper Institute in November for exchange of information and statistical data among 95 per cent of the copper producers in North and South America, and a voluntary curtailment by some of the leading producers in the fall months to reduce stocks on hand, were factors tending toward improvement in the situation. Actually the consumption in the United States decreased in 1926, but European demand increased.

Under the stimulation of high prices in 1925 and 1926 new lead mines were opened and old ones pushed, which resulted in accumulation of stocks, especially abroad, and consequent reduction in price and lessened profit or even loss to the operators. This situation will right itself in time and higher prices seem inevitable in the long run.

Zinc and Tin.—The outlook for higher prices for zinc is not promising. The development of differential flotation of lead-zinc ores and of the electrolytic process of reduction has tremendously increased the production of this metal in a high degree

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of purity from Western ores. Zinc is now being recovered from old smelter slags. Stocks have correspondingly increased and enlarged uses are needed. The Zinc Institute is a helpful factor and the newly formed Zinc Export Association should be of further aid; nevertheless, old zinc districts like the Tri-State of Missouri, Kansas and Oklahoma are hard hit. Incidentally the old retort process of smelting zinc ores seems doomed to give way to the electrolytic process.

A diminution in the world's tin production, due to gradual exhaustion of existing mines, seems inevitable before many years, but at present the price continues so low that a proposal to organize the producers and stabilize the price around 75 cents per pound was under discussion at the end of the year.

Iron and steel trade remained quiet during the latter part of the year and the margin of profit was small, but it was felt that buying had been from hand-to-mouth and stocks were so low that a spirit of hope existed that buying orders and higher prices might appear with the new year. An interesting experiment with far-reaching possibilities is under way in the experimental plant of the United States Steel Corporation at Lorain, Ohio, for the direct reduction of iron from ore.

Coal and Petroleum.—Coal was mined in 1927 at little or no profit. A strike in the union bituminous mines of Pennsylvania, West Virginia and Ohio involved 150,000 miners and another strike in the Rocky Mountain coal fields, which was apparently incited by the Industrial Workers of the World, was the cause of considerable disorder and required the presence of armed troops. In spite of the strikes, a large oversupply of soft coal existed. In Pennsylvania, anthracite mining lagged and that part of the market lost to substitute fuels during the long strike of 1925 will probably never be regained. Even with no strike in 1926 the production did not equal that of the strike year of 1925.

An abnormal production of petroleum from new fields kept stocks up

and prices down and made the margin of profit narrow. Certainly, in spite of dire predictions of early exhaustion of petroleum resources, there is no sign of any shortage today and the situation is such that there is some talk of curtailment by government regulation. With vast resources in oil shale and the possibilities from the liquefaction of coal, a supply of oil is warranted for the world for many years to come.

Platinum and Quicksilver.—Platinum prices receded from their former high peak on account of the increased supply from Russia and the potential production from the known deposits in Africa. The latter source has not as yet yielded any large production because of difficulties met in working out a satisfactory process of recovering the metal from the ore. Quicksilver resources of the world are limited and, in the face of an increasing demand, higher prices were inevitable. Already considerable activity in quicksilver mining has resulted.

Manganese.—The situation in manganese is mixed. The steel people want a lower tariff so that they may secure foreign supplies more favorably. On the other hand, manganese producers in the United States plead for protection to enable them to develop our limited resources and insure a sufficient supply of this metal in case of war. It is the opinion of the writer that our national supply of various forms of manganese ores which can be developed under tariff protection will be found to be greater than is commonly estimated.

PRODUCTION

Non-Metallic Products.—Aside from the production of metals, the mining industry yields an ever-increasing tonnage of non-metallic products ranging upward from the humble sand and gravel for concrete and stone for various purposes to the precious gems. The magnitude of this side of the industry, and the changes that are going on, are frequently not realized. Just now the natural nitrate deposits are meeting keen competition from the plants manufacturing synthetic nitrogen

compounds. Hope exists that a potash industry may be developed in the United States, although as yet the drilling by the U. S. Bureau of Mines in Texas has not yielded results which warrant commercial installation. Many compounds of rare elements and even the elements themselves, which only a few years ago were curiosities found only in laboratories, are now produced on a commercial scale.

Prospecting Methods.—In the present mineral age civilization has reached a higher state than ever before because of the widely increased use of our mineral resources. This cannot go on indefinitely. A number of operating mines are on the downgrade. The old-time prospector is passing and his methods no longer suffice to yield new mines to replace the old. This has led to the rapid development of the scientific geophysical methods. These may be divided into magnetic, electric, gravitation (Eötvös balance) and seismic methods, all of which have their special applications. The Bureau of Mines is studying all of these. Seismic methods have been very successful in locating salt domes in Texas as prospective sources of oil. The development by the American Smelting & Refining Company of ore bodies in Newfoundland containing three million tons of lead-zinc-copper-gold-silver ore is to be credited to electric prospecting.

New Mines.—In North America, Canada seems to hold the greatest possibilities for new mines. Some of the older districts expanded materially during the year. A new large lead-zinc mine was under development in the Sudbury district and Manitoba showed some promising prospects. An encouraging report has been made on the mining possibilities of Panama. Agitation continues for resumption of hydraulic mining for gold in California. Mexico is suffering from high taxation, onerous labor laws and low price of lead. Oil drilling has been resumed in Mexico following a Supreme Court decision confirming the titles of the oil companies to their lands.

OPERATIONS

Cost.—Operations grow larger and larger and technical improvements still continue. The Utah Copper Company has produced as high as 55,300 tons from its surface mine in one day. The Miami Copper Company in 1926 mined by underground methods ore containing only 19.58 pounds of copper per ton and recovered 14½ pounds at a net cost of 10.62 cents per pound. Mining costs were at the low figure of 37.1 cents per ton and milling cost 49.1 cents. Consolidation and expansion of mining companies into widely separated districts with diversification of interests to include even the manufacture of metallic products into articles of trade seems to be the order of the day. Mining companies are thus becoming permanent organizations.

Technical Progress.—Special items of technical advances which may be noted are: increased use of cement for consolidating rock and making artificial mine supports; gasoline in place of steam for operating diamond drills; use of air pressure to stimulate flow of oil wells and of gas lifts in place of pumps for raising the oil; almost universal sharpening of drills by machine and considerable tempering by machine; more electrification of mines and more storage battery locomotives especially in small units; long-hole prospecting by ordinary rock drills; Diesel engines for prime movers; some expansion of the field of liquid oxygen explosives; improved gas detectors, protectors and recorders for methane and carbon monoxide; airplane prospecting, mapping and transport; application of scientific and technical knowledge to the field of non-metallic mining which has not kept pace with the improvements in metal mining. The second and completely revised edition of that valuable *Mining Engineers' Handbook* by Peele appeared from the press of John Wiley and Sons.

The labor situation has been satisfactory. Compared to some lines of industry, mining was slow to replace man power with machine power but is now catching up and is thus able to

carry on in the face of a decreased supply of unskilled immigrant labor. Less labor turnover is evident and labor is being benefited in many ways: by better morale and a spirit of cooperation of employer and workman with a realization by the former that the welfare of the latter is important; by employee ownership, contract and bonus systems, and group insurance; by safety work of the United States Bureau of Mines and of the companies themselves to reduce mining hazards and lower the accident rates; by investigation of the effect of temperature, moisture, carbon dioxide and velocity of air current on the comfort and efficiency of the miner. In the modern development of mining methods and the application of mechanical mining there appears to be a constantly widening

field for young technical graduates quickly to become supervisors of divisional operations, after they are familiar with the details of practical mining.

Milling practice continues to develop along the lines indicated in the AMERICAN YEAR BOOK for the two preceding years, the greatest advance being in differential flotation of separate metals from one another and in the development of more efficient flotation reagents such as phosphor creosol. *The Handbook of Ore Dressing* by A. F. Taggart (John Wiley and Sons, 1927) covers this field of modern milling most thoroughly, and a series of Technical Papers read at the Salt Lake meeting of the American Institute of Mining and Metallurgical Engineers in September, 1927, contain the latest ideas on flotation.

COAL AND COKE

By R. DAWSON HALL

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MINING MANAGEMENT AND METHODS

No notable invention will distinguish 1927 in the history of coal mining. However, it will be regarded as important both from the standpoint of scientific management and wage negotiations.

Specialization in Mining.—There has been a growing sense of the importance of specialization in mine operations, of appointing certain men to plan development, discover the best means of laying out entries and working places, ascertain methods of shooting coal that will provide the cleanest, most easily mechanically-loaded and the largest product, to provide haulage, cutting and loading schedules, investigate and try out new machinery, train men in new methods, prepare safety and performance standards and do other special work for which line officials, who have the daily conduct of operation, have little time and sometimes no aptitude.

The Consolidation, the Pittsburgh and the Union Pacific coal companies are notable examples of firms which

have been able to make such provisions; partly because of the intelligent direction of their properties and partly because the size of their operations made specialization possible, and, as it seems today, necessary.

Carbon-Dioxide Explosive.—Attention should be called to a carbon-dioxide "explosive," the perfecting of which was announced early in the year. The liquified gas is put into a steel cylinder which is pushed into a shothole. The hole is then tamped. The liquid is gasified by a quick application of heat. The gas frees itself from the cylinder by the breaking of a shearing ring and, thus released, presses against the walls of the hole bringing down the coal. This method of breaking down coal is one that is wholly without danger, even to those who stand a few feet away and to one side of it. It is expected that it may be possible to use it universally in working places during the mining shift thus making it feasible to continue to mine, blast and load without any loss of time. This in some states is now forbidden, the

shooting having to be done, hitherto, on the night shift. In some mines the coal is shot by an electric current from the surface when all the men are out of the mine. This will be unnecessary if carbonic dioxide shooting is established. Efforts are being made to use compressed air in a similar manner. Carbon dioxide will extinguish flames should pressure develop it. Air would not do so unless freed of oxygen but the action of the "explosive" is so slow that the heat generated doubtless will not ignite gas. Premature explosions also are impossible with these compressed gases. The use of pellet powder for shooting is rapidly increasing.

A new indicator for methane has been devised that works on the principle that a platinum wire will change its electrical resistance when exposed to percentages of methane. Provision is made so that no internal explosion will project flame from the apparatus, even if an explosive mixture be present.

BITUMINOUS COAL STRIKE

Preliminary Negotiations.—In the early part of the year, efforts were made to prevent a suspension on April 1 when the contract between the operators and mine workers in the bituminous field would come to an end. When the operators' scale committee of the Central Competitive Field (Illinois, Indiana, Ohio and Western Pennsylvania) met in Toledo, Jan. 28, they declared themselves in favor of a commission of four miners and four operators with three mediators chosen by the other eight to determine a scale that would allow the mines of the Central Competitive Region to compete with the non-union, to readjust the scale from time to time, to maintain competitive conditions and to settle grievances on appeal.

The slogan was "A Continuously Competitive Scale." The union slogan was "No Backward Step," meaning thereby at least the Jacksonville scale and a two-year agreement. These latter demands were definitely accepted by the union as their official stand at Indianapolis, Ind.

The two parties met at Miami, Fla.,

Feb. 14, and parted without any approach to an agreement, Feb. 21. John L. Lewis, the president of the United Mine Workers of America offered in return for the scale a joint committee to reduce accidents, eliminate unfair competition, work for better freight rates for union coal and opposing adverse legislation except in regard to safety.

Suspension of Mining.—No further meeting was held, and April 1, the suspension began. It was well known that big stocks of coal were on hand. Later it was ascertained by the U. S. Bureau of Mines that 75,000,000 tons of bituminous coal had been stacked, but with what was at the Great Lakes and what was in railroad cars the tonnage was probably not far below 100,000,000 tons.

So there was no anxiety. Had there been any, it would have been dispelled by Mr. Lewis' offer to make interim agreements permitting work during the pleasure of either party so long as the Jacksonville scale was paid. A number of operators outside the Central Competitive Region accepted the offer and several within.

On April 20, the strip pits in Indiana signed the Jacksonville Scale. On the other hand, mines in Western Pennsylvania began to open up at reduced wages. On May 3, the shaft operators in the same state met the mine workers at Terre Haute but without result. A meeting of the central Pennsylvania operators with the union, on May 24, found the former just as adamantly determined as ever that the scale must be lowered if an agreement was to be made, a recess being provided till June 15.

Production Little Affected.—Negotiations brought about a meeting of Illinois operators and miners, June 21, but the mine workers proving of unchanged mind, nothing was effected. Meantime the loss of tonnage in the union fields was so amply compensated by the gains in output of the non-union fields that the production curve, for the period since the suspension commenced, lay even above the line for the same period in 1925, though below that of 1926.

No wonder no one was apprehensive. The mine worker and operator

might worry, but the public was well satisfied. The price of coal even was falling, though it was higher than it had been in 1926.

Parleys.—On June 29, the Ohio operators declared their determination to open their mines to non-union men after July 15, if the union did not consent to a certain substantial reduction which they named, but this was without importance, for when they did open their mines neither they nor the state policed them adequately, and the effort proved futile. A few threats and some violence kept the non-union men from the mines. Early in August, Governor Donahey, of Ohio, endeavored to get a reconvening of the Central Competitive Field Conference without avail. The United Mine Workers wanted it, but none of the groups of the operators desired the renewal of such parleys.

Partial Agreement.—At length the Illinois operators and mine workers tried to make an agreement. The third effort made Sept. 7, was a failure, but a fourth on Oct. 1, brought a renewal of the Jacksonville scale till April 1, 1928. This was promptly followed by settlements in the states of Missouri, Kansas, Arkansas and Oklahoma, Oct. 6, and in Indiana, Oct. 7.

The Federation of Labor meeting in Pittsburgh, Nov. 15, made provision for protests against the alleged violations of the rights of the coal mine workers to President Coolidge and Governor Fisher of Pennsylvania.

On Dec. 9, Secretary of Labor Davis issued a call to the operators in

the "districts which were formerly union but which were still without agreements to meet the union officials in Washington," but the operators replied that nothing could be gained by a conference.

In Pittsburgh and northern West Virginia some mines were running non-union and even turning away men. In Ohio and in other parts of Pennsylvania efforts were being made to run non-union. The year ended with the production of bituminous coal at a low ebb for the time of year, but this was due solely to a lack of demand resultant on decreased activity in industrial circles.

THE ANTHRACITE FIELD

Mt. Carmel Meeting.—Anthracite has been extremely inactive throughout the year. A meeting was held at the instance of the Chamber of Commerce of Mt. Carmel, Pa., in that city, Nov. 10, to find ways and means of increasing anthracite business, which perhaps created a somewhat more friendly feeling between the citizens of the region, the miners and operators who are all worried about the situation. Oil, gas and central steam (which last two are manufactured largely from bituminous coal) and bituminous coal used for power and domestic heating have cut heavily, at least temporarily, into the demand for anthracite. At that meeting the cities hardly rallied to smokeless fuel as much as some expected, and it is questionable whether Mt. Carmel could be rated as any other than a moral victory.

PETROLEUM

BY ERNEST R. LILLEY

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Consumption.—The demand for gasoline, the most important product now produced from petroleum, exceeded in 1927 the consumption of any previous year. The total consumption was approximately thirteen per cent above that of 1926. Daily consumption during the first nine months averaged 822,000 barrels. Ex-

ports, during the same period, averaged 123,000 barrels. The demand for fuel oil increased slightly despite the slowing up of industry. The total consumption of lubricants and wax showed but little change from that of 1926. Kerosene continued to decline in importance, both export and domestic consumption being con-

siderably lower than during the previous year.

Production.—The continuance of a large consumption of fuel oil and the large increase in gasoline used in the face of recession in industry may be traced in part to the lower prices resulting from one of the most serious periods of over-production ever faced by the oil industry. Production in the United States totaled 897,000,000 barrels. This represents an increase of approximately 127,000,000 barrels over 1926, an amount which is equal to the combined production of the two next most important nations, Russia and Mexico. The number of producing wells in the United States on January 1 was 318,600.

Texas.—Production in the Panhandle District of Texas rose steadily to an average of 135,651 barrels daily in May. The natural decline set in shortly afterward. It was assisted by the shutting down of drilling operations. "Spindletop," the chief producer of the Gulf Coast area of Texas, which had been revived by the discovery of rich sands on the flanks of the salt core in 1926, declined steadily throughout the year. Production in December averaged little more than one-half of the 82,000 barrel daily yield secured during January.

Pennsylvania.—The results of re-drilling and flooding operations in old areas in Pennsylvania were shown in substantial increases in the production of the Appalachian field. "Smackover" in Arkansas averaged 100,000 barrels a day throughout the year. Operations in the Rocky Mountain States were on a much lower scale than in 1926, wells being shut down wherever it was possible to do so.

California.—Several new pools were discovered in the Valley Field of California, but their development was postponed indefinitely because of low prices. Similarly, the production of the wells in the older pools was held to a minimum. Production in the State as a whole was about the same as in 1926, when 224,673,000 barrels were produced. While "Ventura Avenue" and "Seal Beach"

joined the group of major producers in the coastal section, neither of them developed production comparable with that of the sensational pools of 1923. The normal decline of the famous Long Beach pool was interrupted by the discovery of prolific sands below 5,500 feet. The yield of this pool rose above 100,000 barrels daily in November.

Oklahoma.—The outstanding developments of the year were those in the Seminole district in Oklahoma, and in West Texas. The Seminole City pool in the district of the same name was discovered early in 1926. At first its development followed the normal course of Wilcox sand pools, that is rapid rise in production, followed by rapid decline as the gas pressure is reduced. However, in December of 1926 the gas-lift method of pumping was applied, with sensational results, the production rising steadily to 253,000 barrels a day on February 28. The decline in production in Seminole City after that was more than balanced by increased production from new discoveries, the large "Bowlegs" and "Earlsboro" pools and the smaller ones known as "Searight" and "Little River." Despite proration and shutdown movements, production in the region as a whole reached 527,400 barrels daily on July 30. The natural decline in the developed sections caused a drop of approximately 100,000 barrels daily by December. Shutdown agreements have postponed the drilling of wells offsetting tests which have indicated the existence of several new pools in the district. These will be drilled in 1928 because of lease requirements.

West Texas.—Production in West Texas averaged 68,594 barrels daily in January. It passed 200,000 barrels daily in September, the oil coming mainly from two large pools in Upton and Crane counties. The most sensational discovery was that of "Yates" pool in Pecos County; but as this section had no trunk pipe-line facilities until late in September it did not affect the market until late in the year. Even then, pipe-line facilities of approximately 40,000 barrels daily capacity represented a

very small proportion of the potential output. The evaluation of the potentialities of another major pool, "Hendricks" in Winkler County, is still impossible because of the absence of adequate transportation facilities. These can hardly be made available before the summer of 1928.

Prices and Stocks.—The seriousness of Seminole over-production was evidenced by a series of price cuts which brought the price of 36° Baumé oil in Oklahoma from \$2.29 on November 16, 1926, to \$1.13 a barrel on April 13, 1927. Prices in other fields and on refined products declined accordingly. The high sulphur crude oil in Pecos, Upton, and Crane Counties was posted at 60¢ a barrel in August. This served to undermine the fuel-oil structure in the latter part of the year. Stocks of crude oil and refined products reflected the abnormal increase in supply by increasing about 70,000,000 barrels over the total of 573,379,000 barrels in storage on January 1, 1927.

Conservation and Stabilization.—The course of development and production work during the year has demonstrated more clearly than any of the discussions before the Federal Oil Conservation Board the necessity of some workable plans of stabilization and conservation. Signs of the danger of overproduction were fully in evidence in the latter part of 1926.

However, the early termination of many leases forced operators to start and complete prospect wells or lose their leases. Once a discovery was made the checkerboard method of leasing, in which adjacent leases are owned by competing concerns, forced the immediate starting of offset wells. A combination of agreement by the operators and action by the State Corporation Commission resulted in temporarily postponing the drilling and producing of oil in several of the areas in the Seminole district. Even the most optimistic would hardly consider the result to be entirely satisfactory.

The industry enters the year 1928 with the burden of carrying charges for oil in storage greater than ever before in its history. The temporary decline in production which may be expected through the postponing of the taking of oil from new discoveries and the drilling of offsets in Oklahoma, and the absence of pipe lines in West Texas should give the industry a short breathing spell. However, it would appear that the prevention of a reoccurrence of overproduction, low prices, and the resulting use of oil as fuel instead of in the making of gasoline and lubricants cannot be avoided unless some workable plan of "unit operation" of new discoveries is developed by engineers and its use made legally permissible.

COPPER

By LEONARD S. AUSTIN

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The General Situation.—In spite of the rising cost of labor and supplies, improved methods have yielded an actual reduction in operating costs, and with it the utilization of lower-grade ore, formerly set aside as of no commercial value. Because of this, the world supply has been greatly increased. Among improved methods may be given the use of the steam, or preferably the electric power-shovel, caving methods in mining, the basic converter, and the large reverberatory furnace, to-

gether with powdered coal or oil for firing, selective flotation for the mixed copper-bearing sulphides, and the leaching of low-grade oxide ore. On the commercial side we find a concentration of copper refining plants at the great commercial centers, where low-priced capital can be had, and where there is a large central market for the refined product.

Mining Methods.—The low prices for copper necessitate lower-cost methods of mining, as well as improved metallurgical processes, so

that low-grade ores may be mined and treated at a profit. At present, the largest producer of copper in the United States is mining a 1-per cent ore, while another is getting but 14.7 lb. copper per ton of ore. Ten years ago, it would have been impossible to mine and treat an ore containing 0.7 per cent copper, yet this is now an accomplished fact. Some years ago, copper ores of 5 per cent and over were the ones mined. Today, the exploitation of low-grade porphyries is performed on a large scale with success, due to the employment of low-cost stoping methods. So it is, that ores formerly regarded as non-commercial, are now extensively worked, and the quantity available has been greatly increased.

Stoping Methods.—Success in the operation of a mine may depend upon the selection of a proper stoping method, embodying the principles of safety, efficiency and economy. Safety of the men should come first, efficiency involves flexibility of output to conform to metallurgical needs, good working conditions and efficient operation. Economy calls for moderate first cost of installation, and the lowest working cost per ton delivered. These factors will depend upon the size, shape and dip of the ore-body, the occurrence of the ore; also the amount of necessary waste, and its easy sorting out. Also we must note the conditions of the back and of the walls. As to the ore itself, we must consider its grade and its complete extraction. Where wholesale mining is practiced, the original investment is greater, and there is dilution due to waste. Where the stoping is selective, the initial investment is less, and a higher-grade product is obtained. In presence of copper sulphide, the ore is apt to heat up, due to the action of air and moisture, and acid-soluble copper is produced, unfitted for recovery with the unacted-on sulphides.

Commercial and Non-Commercial Ore.—The prime purpose of ore mining is the discovery and extraction of pay ore, and such ore is regarded as commercial. If the tonnage is large, and wholesale extraction methods are employed, a low cost results,

the grade of the ore being low. If the tonnage is small, and extraction difficult, the grade must be high enough to overcome this disability; else, the ore is non-commercial.

Differential Flotation.—Selective and differential flotation has made great advances during the past year, and is not so complicated a process as of a few years ago. One section of the Utah-Apex mill handles lead copper-iron sulphides. The lead and copper sulphides are together floated by the use of potassium zanthate. The resultant lead-copper froth is now conditioned, using 1 lb. of quicklime and 0.5 lb. of sodium sulphate per ton treated, thus depressing the copper, so that the lead sulphide is floated from it in the final separation.

The Tennessee Copper Co. is selling an iron concentrate of about 62 per cent Fé as a by-product of its flotation methods, this being a tailing depressed in that operation.

Improved Roasting and Reverberatory Work.—The Copper Queen smelter of the Phelps-Dodge Corporation is being made over in order to lower smelting costs. The chief novelty is that the roasting furnaces are set above the reverberatories. The hot calcine from the roasters are then transferred to the reverberatories with the least possible loss of heat, and so of resultant immediate remelting.

Inspiration Consolidated Copper Co.—The year 1927 marked the completion and successful operation of the \$6,000,000 leaching plant of the Company. The copper, in the ore treated, is a mixture of oxides and silicates of copper, as well as of chalcocite. The leach-liquor is an acidified solution of copper and iron sulphides, the ferric sulphate present being the solvent for the chalcocite, while the free acid dissolves the oxides and silicates of copper. Ferric iron is regenerated during electrolysis. A leaching cycle of thirteen days is used, being one day each for filling and emptying vats, eight days actual leaching time, and three days for washing. A circulating wash is employed in order thoroughly to extract the copper. The plant has a capacity of 7,500 tons

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daily. Besides its crushing department, where the ore is crushed $\frac{3}{8}$ to $\frac{1}{4}$ inch, it has thirteen rectangular leaching tanks, each 75 by 175 feet area by 18 feet deep. The normal solution, used in the leaching, contains 5 to 7 per cent sulphuric acid and 1.1 per cent ferric sulphate.

Union Miniere de Haut Katanga.—The new large reverberatories of this Company are expected to be at work at the end of 1927. They will be able to output a tonnage of 30,000 to 40,000 metric tons of copper bars annually. The first unit of the electrolytic leaching-plant has just been put in operation, and by 1929 other equipment will be completed. It is estimated that with the aid of these new plants the copper production will be as much as 140,000 tons yearly. Later, there will follow two additional leaching units of 30,000 tons each per annum at the western mines, these supplied with hydroelectric power from the Lufira Falls. The cost of production at the leaching plants has been estimated at \$150 to \$200 per ton of copper. To this estimate must be added freight and overhead expenses.

Heap-Leaching Problems.—There is an extensive field open for heap-leaching, and for leaching in place. In heap-leaching time should be saved in getting the copper into solution, and the heaps must be built so that

capillarity becomes less important. That is, there should be finer crushing and sizing in order to more quickly get the metal into solution; but the farther one goes in crushing, the closer one comes to standard tank-leaching, and the ore, in the normal field for heap-leaching, is not carrying enough copper to pay for these refinements.

Refining in Transit.—Where the freight rate on blister copper from some Western smelting works to the Atlantic seaboard refinery is, for example, \$17.00, and a local rate from the refinery to a consumer of copper might be \$5.00 per ton, a through rate, that is, a refining-in-transit rate might be no more than \$18.00. This enables the refinery to sell to Connecticut consumers at a rate somewhat less than that quoted to other consumers where the freight is little or no higher. It may then be argued that the through rate of \$13.00 shall apply as between refinery and consumer, or that \$17.00 of the through rate applies as between the smelter and the refinery, and only \$1.00 between refinery and consumer. For refining-in-transit, the car of crude copper is unloaded and at once replaced by an equivalent refined product, this then to be forthwith forwarded to the consumer, and thus there is no delay in paying for the freight.

GOLD AND SILVER

BY M. W. VON BERNEWITZ

MINING AND METALLURGICAL ENGINEER, PITTSBURGH

General.—Actually, there is little to chronicle concerning gold and silver mining and production in the United States during 1927. In general, the principal producers and districts maintained about their regular rate, although there was some curtailment of operations; a few new mines commenced to produce; the trend of commodity prices was downward; labor was plentiful and restful; and the lower prices for copper, lead, and zinc resulted in some slackening of mining for those ores and the consequent decrease in gold and

silver as by-products. Probably the year will end in a total of less than that in 1926, which was \$48,000,000 of gold and 62,000,000 ounces (at 62 cents) of silver.

GOLD

Mining.—In general, it may be said that the average gold mine—that is, one which produces a few thousand dollars a month—makes little profit. This is the case in nearly all countries. But some large operators can make and do report good profit and pay dividends; yet it

requires skilled management, capable labor, and careful attention to details.

Many gold mines await financing, but the usual sources of funds have been closed because of adverse economic and political conditions, and these cannot be overcome except through legislative action, to quote *The Mining Congress Journal* for September, 1927, which suggests methods of relief for the industry, and concludes by saying that "Unless necessary measures of relief are evolved and applied, the future outlook for gold mining is not hopeful. Large resources in the form of low-grade ores exist, and these should not be abandoned."

In the United States, Alaska, Arizona, California, Colorado, Nevada, New Mexico, Oregon, South Dakota, and Washington, may be classed as our real gold producers. Idaho, Montana, and Utah produce gold mainly as a by-product of copper ores.

In Alaska, placer mining, actually and in development, is improving and an increase in gold may be reported for 1927, particularly from the Nome district where new dredges are in operation. At Fairbanks, one company is spending a large amount of money in a 74-mile ditch for hydraulic mining, 2 dredges, and a power-plant, to attack an extensive area of gravel.

The U. S. Bureau of Mines published its Bulletin No. 259 on methods and costs of placer mining in Alaska. It is very complete and deals with every phase and the future of the industry.

Outlook in Alaska.—As to lode mining, in the Territory, the principal operations are on Chicagof Island and at Juneau. At the latter is the Alaska Juneau company which is trying hard to make 75-cent ore pay by mining up to 12,000 tons a day, sorting out 57 per cent of it, and milling up to 7,000 tons a day. Some months a good surplus is reported and in others a deficit. Millions have been spent by a skilled management and it is hoped that there will be due reward. According to P. R. Bradley, general manager of this property, at

a meeting of the San Francisco Section of the American Institute of Mining and Metallurgical Engineers in October, 1927, the future metal mining discoveries in Alaska can hardly be expected to keep pace with the exhaustion of the mines now being operated.

In Arizona, a large part of the gold comes from ores in Mohave County, where treatment plants are in operation; but the copper and lead ores contribute a fair proportion of the total, and any curtailment of the mining of these ores is reflected in gold, and silver. At Oatman, two companies have started joint exploration in a new shaft to be sunk to 1,000 feet.

In California, half of the gold is recovered by deep mining and half by placer methods. The yield by both is gradually decreasing—partly because of depleted deposits, and partly because of non-profitable operations; also suspension of milling to undertake further development. In the Mother Lode district and at Grass Valley are the chief lode mines, and some curtailment was reported there.

Mention was made last year of the engineering survey being made in California to determine the feasibility of resuming hydraulic mining. The report of 85 pages was presented to the State Legislature in February, 1927. Prior to 1884, when this form of mining was stopped by law owing to the silting of streams, the average annual output of gold was \$10,000,000; in 1925 it was only \$175,000. The report held that hydraulic mining may be resumed if impounding dams, whose proposed sites were determined and cost estimated, are constructed at strategic points on certain rivers. The dams would provide storage of debris for 20 years of mining.

In April, 1927, a bill easily passed the Assembly to appropriate money for further engineering studies, but it failed by one vote to get an absolute majority in the Senate. The agricultural interests were unfavorable to the project. The bill will probably be re-introduced at the next session of the State Legislature.

XII. MINERAL INDUSTRIES

Meanwhile, the engineers are studying the problems involved, especially whether it is feasible to work the low-grade gravels under present conditions, including the available water. It is estimated that if hydraulic mining were resumed on the scale contemplated, the gold recovered would add at least \$1,000,000 a year to the declining output of California. The leading mining journals of the country—the *Engineering and Mining Journal* and *Mining and Metallurgy* of New York and *The Mining Congress Journal* of Washington, D. C.—are favorable to a resumption of this form of mining. The last named considers it essential to California's mining industry, and in its issue for November, 1927, has a good review of hydraulic mining since 1876 and the probable results, by R. H. Elliott of San Francisco.

In Colorado, many operators are marking time, yet several new projects have been started. On the whole, the production is being fairly well maintained. From Cripple Creek a fair tonnage of ore is shipped to the treatment plant near Colorado Springs, and the Portland company is now treating all of its ore by flotation and cyanidation at the mine. Several properties are prospecting and others are being reopened. The paper by G. F. Loughlin, of the U. S. Geological Survey, published in 1927 by the American Institute of Mining and Metallurgical Engineers, is suggestive of some practical application to Cripple Creek. Likewise, *Professional Paper 148* (1927) of the U. S. Geological Survey, by S. F. Emmons, J. D. Irving, and G. F. Loughlin, may suggest lines of development at Leadville, a locality which is a producer of gold and silver.

Mention may be made to the trials made of geo-physical prospecting in the Boulder district of Colorado during the summer of 1927 by the U. S. Bureau of Mines. This area has yielded about \$17,000,000 in precious metals, and it was selected in order that trial methods could be made in a known district before they were applied in districts of unknown metal content.

In Nevada, the trend of gold production from straight gold ores is steadily downward. As a matter of fact, the bulk of the gold is recovered with the silver, and some from copper ore. Actually, there are few gold districts at present. A more or less exciting rush set in early in 1927 to the old Weepah district, but little has come of it. Some exploration is under way at a depth of 2,100 feet at Goldfield.

In South Dakota.—South Dakota's reputation as a gold producer at present and for many years past, has relied upon the Homestake mine, which is recovering close to \$6,000,000 a year from less than \$4 ore. Dividends are paid regularly, and the future is bright. The problem of treating the refractory blue ores of the Black Hills district has been successfully solved by the U. S. Bureau of Mines, in cooperation with the South Dakota School of Mines and a local committee. This may result in the reopening of mines and treating the large reserves of these ores.

SILVER

Price.—In THE AMERICAN YEAR BOOK for 1926, some space was devoted to the break in silver, whose price fell from an average of 69 cents an ounce for 1925 to 62 cents for 1926. The decline was arrested late in 1926. The principal causes were the proposal to place India on a gold basis, sales by China, and the failure of a large Oriental bank. The price of the metal gradually improved to an average of nearly 58 cents in February, 1927. A slight drop was recorded in August on account of sales by India, but this was soon recovered, and the year ended with an average of about 56 cents an ounce. This is 6 cents lower than that for 1926, and if the American output of silver in 1927 is 60,000,000 ounces, producers will receive \$3,600,000 less than in 1926 and \$8,200,000 less than in 1925. But as 70 per cent of this is by-product metal, these producers will not feel the drop as will those who mine straight silver ore, as at Tonopah, Nevada, for instance.

Purchases.—In order to force the completion of the purchases of silver under the terms of the Pittman Act of 1918, the American Silver Producers' Association brought suit against the Treasury Department and the Bureau of the Mint to purchase 14,589,730 ounces at \$1 an ounce, the price paid by the Government during the World War. The Secretary and Director of the respective Department and Bureau filed an answer and refused to make such purchases on the grounds that all of the silver dollars melted down to supply Great Britain for use in India during that period had been purchased under the act; also that it is unnecessary to buy silver to replace what was used for subsidiary coinage, inasmuch as the allocations of silver for this purpose were revoked and the metal was subsequently returned to the silver-dollar account.

The Association mentioned represents 60 per cent of the world's silver production, in North and South America and Mexico. The domestic consumption, it has stated, has gained since the publicity campaign started, and this market is one of the most promising outlets to the silver producer. More attention is to be devoted to telling the people about the beauty, utility, and durability of silver objects. Bankers state, the Association reports, that silver will be used more in supplying the monetary needs of the world.

Tarnish Tests.—One trouble with silver materials and appliances is that they tarnish in certain atmospheres, and to determine if a tarnish-resistant silver alloy could be made, the U. S. Bureau of Mines and U. S. Bureau of Standards undertook an extensive investigation. The results of the joint research were published in July, 1927, as Technologic Paper No. 348 of the latter bureau. A wide variety of alloys was tested, but none can be described as non-tarnishing. All of them could be tarnished under sufficiently severe conditions; but many of them were distinctly more resistant to laboratory sulfur-tarnish tests than ordinary sterling silver. The development of such an alloy is rather unlikely, and there seems to be

little opportunity for an immediate revolution of the silver industry by means of the introduction of a non-tarnishing alloy, to quote the report.

Production.—In the United States, California, Colorado, and Nevada, may be classed as our real silver producers. Arizona, Idaho, Montana, and Utah produce silver mainly as a by-product of copper, lead, and zinc ores. In California, the bulk of the straight silver is extracted at the California Rand mine in the southeastern part of the State. For the last fiscal year the company reports better results and dividends have been resumed. In Colorado, silver comes from many districts where it is associated with gold, or with lead and zinc, as at Leadville, Clear Creek, Creede, and within the San Juan region.

A report by Adolph Knopf on recent developments in the Aspen district, which was described in a monograph by J. E. Spurr in 1898, was issued in 1926 by the U. S. Geological Survey as Bulletin 785. This district has produced more than \$73,000,000 of silver, as well as lead, zinc, copper, and a little gold. The maximum output was \$8,000,000 of these metals in 1892. The Little Annie mine mentioned, in the southern part of the district, produced very rich ore during 1926. The ore bodies, and recent operations are described, particularly those of the Hope and Midnight companies.

In Nevada, the Tonopah and Comstock districts produce most of the silver, although a good deal comes from copper ore at Ely. Some curtailment is reported from Tonopah and a considerable decrease is expected from the Comstock owing to the final shutdown of the United Comstock mine.

As to Arizona, Idaho, Montana, and Utah, there are few producers of straight silver ores in these States, although several dormant districts have possibilities, and most of the silver is recovered with the copper, lead, and zinc ores, which are being benefited more and more by the application of processes of selective flotation, and thus assist in the further production of gold and silver.

IRON AND STEEL

BY EDWIN F. CONE

ASSOCIATE EDITOR, *The Iron Age*

It was not expected, early in 1927, that the year then starting would measure up in volume of pig iron and steel production to the record-breaking year of 1926. It was predicted that if the volume fell somewhere between that of 1926 and 1925, expectations would be satisfactorily met.

Pig Iron.—With December estimated, the 1927 production was about 36,400,000 gross tons or less than the production of both 1926 and 1925 which was 39,070,470 tons and 36,403,470 tons respectively. The peak month was March, from which time the decline was successive for each month with December, the smallest output since June, 1925. On January 1, 1928, there were only 170 blast furnaces active as compared with 203 on January 1, 1927. Last year's pig iron output was the smallest since 1924 and was exceeded by seven preceding years, 1916, 1917, 1918, 1920, 1923 (the record year), 1925 and 1926. A feature of the year was the abandonment of old or inactive stacks. On January 1, 1928, there were 357 furnaces on the active list as compared with 371 on January 1, 1927, a loss of 14 during the year, no new furnaces having been constructed.

Steel Output.—With December estimated, the 1927 steel production, including steel castings, was about 44,500,000 tons. This compares with 48,294,000 tons in 1926. Here again steel production was less than that of 1925 and 1926 but was larger than in 1924, when the total was 37,931,900 tons. The largest ingot output ever made in one month was a feature of the 1927 record—4,499,092 tons in March. There was almost an uninterrupted decline each month commencing with April.

Greater Stability.—There have been several factors making for greater stability during 1927, as pointed out by *The Iron Age*. The first was a series of efforts by producers to raise the price of various finished steel prod-

ucts. This movement came late in the year and it will take the history of the early part of 1928 to determine the success of these efforts, which it is generally conceded were decidedly needed. The second factor working toward greater stability was progress made in consolidations of steel companies, "reducing the scramble for profitless tonnage." A third factor was the smaller additions last year or planned for the coming year to the country's steel-making capacity.

Sheet Manufacture.—The constructive development during the year was the beginning on a large scale of continuous sheet manufacture. "While on its face continuous sheet and strip rolling suggests destructive competition, and the eventual elimination of smaller mills, there are indications that the patent situation will be so handled by the granting of licenses that the continuous mill may tend rather to the stabilizing of the very important market for the thinner products."

Composite Prices.—Decline in prices of both pig iron and steel was a marked feature of the 1927 record. At the close of the year the composite price for pig iron, as compiled by *The Iron Age*, was the lowest at \$17.55 per ton in December than for any month since December, 1915, when it was \$17.34 per ton. The composite price for the year was \$18.55 per ton comparing with \$20.42 in 1926. The 1927 price was the lowest since 1915 when it was \$13.54 per ton. In steel the declines were not quite so precipitous. For finished steel, the composite price of the same authority was 2.439¢ per lb. for 1927 as compared with 2.439¢ in 1926. The year's average thus fell off \$1.64 per net ton whereas the 1926 average was only 52¢ a ton under that of 1925.

Price Trend.—The relative stability of finished steel prices as compared with pig iron is a feature of

ZINC

the 1927 price trend. The highest finished steel composite figure during 1927, says *The Iron Age*, was 7 per cent above the lowest; in pig iron, the divergence being 12.4 per cent. Since the peak early in 1923 both trends have been downward.

Exports and Imports.—Iron and steel exports for 1927 with December estimated, will approximate 2,190,000 gross tons. This compares with 2,167,000 tons in 1926 and with 1,762,500 tons in 1925. The 1927 increase is accounted for almost entirely by large scrap exports which approximated 200,000 tons. As in past years, Canada was the largest buyer of American steel products, taking 38.5 per cent last year against 39 per cent in 1926. Japan's was second last year as usual and took about 10 per cent more of our products last year than in 1926.

Imports last year showed a 34 per cent shrinkage or from 1,034,583 tons to December 1, 1926, to 656,279 tons

to December 1, 1927. Most of this falling off is accounted for by pig iron and scrap, which together showed a drop of about 336,000 tons. In 1926, pig iron was 42 per cent of the 1926 total but only 17 per cent in 1927.

Metallurgy.—No startling developments in metallurgy of iron and steel came to the surface last year. Betterment of existing processes was continually aimed at and definite progress was recorded. Many in the steel industry as a whole are watching with eager interest the outcome of the new sponge iron process plant of the United States Steel Corporation at Lorain, Ohio. Early this year this plant, using the Hornsey-Wills process for direct reduction of iron ore, will probably be in active operation. If successful it will demonstrate that steel can be made from iron ore without the use of a blast furnace. The results may ultimately revolutionize the industry.

ZINC

By W. R. INGALLS

DIRECTOR, AMERICAN BUREAU OF METAL STATISTICS

Production and Consumption.—The world's production of zinc in the first half of 1927 was 665,600 metric tons and the statistics for the first 10 months indicate that the total for the year will be about 1,450,000 tons, compared with 1,250,000 tons in 1926. The world's production in the first half of 1926 was about 25,000 tons in excess of the world's consumption. The average prices for spelter were 6.66¢ per lb. St. Louis and £30.98 London in January, 1927; and 6¢ St. Louis and £26.9 London in October, the markets having been steadily declining during the year and having been much below the price levels of the corresponding period in 1926. The unbalance between production and consumption in itself was too slight to produce so drastic a decline in price. The explanation is to be found in an increased production of ore, a great accumulation in the hands of smelters, and consequently an immediate potentiality for metal

production in excess of what was actually being made.

Although the world's consumption increased during the first half of 1927, divisionally the experience was irregular. Europe had a strong increase, reflecting general economic improvement. On the other hand, consumption in the United States was somewhat impaired, reflecting the check in municipal building and in automobile manufacture; and the distress in some of our agricultural regions.

Selective Flotation.—On the side of production the zinc industry has been experiencing something like a revolution during the last two years; in consequence of the general introduction of the new process of selective flotation for the beneficiation of lead-zinc or lead-zinc-iron ores. This process was introduced in 1921, but for two or three years it did not attract general attention. With its aid almost any ore of this character that

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had previously been considered as rebellious became amenable to beneficiation. About 1925 there was a general appreciation of this and an expeditious application of the process in many places. An immediate consequence was that whereas the outlook previously had been for a scarcity in the supply of zinc ore there was a change almost overnight to the prospect for a plethora. The latter condition has obtained since then and the commercial future for zinc is now a matter of waiting for consumption to grow up to production ability, the latter being, of course, subject to the exhaustion of old mines.

Flotation Concentrate.—The flood of flotation concentrate has been not only a powerful factor in the commercial position of zinc but also in the metallurgy. The flotation concentrate comes to the smelter in the form of a sticky mud, which when dry becomes a fine-grained dusty material more or less of the physical nature of wheat flour. With their previously existing arrangements smelters were not equipped easily to handle either the mud or the flour, the former condition introducing physical difficulties in handling while the latter entailed serious loss of ore by dusting.

Up to 1927 the smelters worked off this new material in conjunction with their previously normal ore and so carried it through their process with reasonably fair results. With the beginning of 1927, however, the supply of flotation concentrate had increased to such an extent that some smelters had to be put upon an all-flotation basis, and difficulties then became emphatic, especially if the roasting had to be done in multiple-hearth furnaces and in connection with the manufacture of sulphuric acid as a by-product.

Smelter Improvement.—These difficulties are by no means insuperable and in the end it will be found that it has been an economic blessing that metallurgists were constrained to face and master them. The trouble has been merely that smelters, having previously refused to modernize their plants and practices, became finally constrained to do so. Obvi-

ously this necessitates rather large capital expenditures to which the metallurgical industry has previously been adverse and to which it finally consents only under economic pressure.

The zinc metallurgical industry in America has historically lagged. In recent years the treatment of the most docile ores has not resulted in the recovery of much more than five-sixths of their zinc content. We may be sure that modernization, finally enforced by necessity, is going to result in a much higher extraction of zinc from difficult ore than was previously realized from docile ore, and at a lower cost per ton of ore treated, but of course at an increased expense for capital charges.

Roasting Furnaces.—The modernization of plant in America is taking the form of the substitution of roasting furnaces of the Ingalls-McDougall type, not trying to roast completely in them but finishing the desulphurization by sintering on Dwight-Lloyd machines and collecting the dust raised in the process by means of Cottrell precipitators. Dwight-Lloyd sinterers were introduced rather extensively during 1927 and in so far as that phase of the modernized process is concerned the results have been superior to what anyone has previously ventured to expect.

Electrolytic Extraction.—The electrolytic extractors, who work with a relatively new process and were already equipped to treat excessively fine ore, have not had the difficulties confronting distillers possessing old plants. The production of electrolytic zinc has, therefore, continued to forge ahead and has had a tremendous effect in the market. In 1926 the world's production of electrolytic zinc was 17% of the total, in 1927 it has been greater, and in 1928 it will be greater still. The Anaconda Copper Mining Co., at Anaconda, Mont., the Sullivan Mining Co., at Kellogg, Idaho, and the Rhodesia Broken Hill Development Co. at Broken Hill in northern Rhodesia, have each been building new plants that will go into operation early in 1928.

LEAD

BY ALLISON BUTTS

PROFESSOR, LEHIGH UNIVERSITY

Use of Lead.—The average person sees but little lead as he goes about his daily life and perhaps can only remember that some lead pipes are used in his plumbing, that his automobile and radio batteries have lead in them, and that he has heard of lead bullets. Yet lead is now used in greater amount than any other metal except iron and steel. The year 1927 witnessed an increase in the world's production of lead for the sixth successive year, the total being almost double the amount produced in 1919, 1920, or 1921.

THE LEAD MARKET

Supply and Demand.—The continued growth in production has, of course, been in response to a growing demand, and production has until recently scarcely been able to keep pace with the call for the metal. During the past year, however, there has been some lessening of the demand for lead, due chiefly to slackening in the storage-battery and building industries, so that supplies of the metal have been ample and at times heavy. There has been neither a large increase of output nor a large decrease in consumption, but the change has been just sufficient to upset the market balance and swing prices downward. That such a condition will prevail in the next few years is highly improbable, though it may persist for a time in the more immediate future. New supplies of lead are not in sight, while needs for lead are continually tending to increase.

Price.—The price of lead had a downward trend during most of 1927. The price at New York averaged 6.75 cents per pound for the year, compared with 8.42 cents in 1926, 9.02 cents in 1925, and 4.37 cents in 1913. Thus from about double the pre-war figure, the price descended to an average only about 50 per cent greater than the pre-war figure.

SOURCES OF DEMAND

Trade Needs.—Of the three uses of lead mentioned in the first paragraph of this review, only one is statistically among the leading ones, as will appear below. The increase in need for lead manifested in the United States in recent years has not been distributed uniformly among its uses. On the contrary, there has been a greatly expanding demand in some lines and a diminishing one in others. Until 1924 the use of lead by the paint industry, chiefly for white lead, was the greatest form of consumption. Since then storage batteries have constituted the largest single use, due to the growth of both the automobile and the radio industries. But another use, little known outside of the trade, has been growing at an even more rapid rate, namely for corrosion-proof and moisture-proof coverings used to protect sub-surface electric cables. This is now the second-largest use of lead, being about on a par in amount with the storage-battery consumption. In 1927 it is quite possible that cable manufactures may have taken more lead than battery makers; complete data are not yet at hand.

Building Demand.—The three uses just mentioned, namely storage batteries, cable coverings, and pigments, consume over half of the lead used in the United States. Another large consumer is the building industry, and among the many smaller uses the most important are solder, bearing metal, lead foil, calking, ammunition, lead weights, sinkers and other castings, and type-metal.

PRODUCTION

Primary and Secondary Output.—An accounting of the amount of lead produced should consider both primary and secondary output. Primary lead refers to metal produced from the ore, entering the market as lead for the first time. Secondary lead refers to metal obtained by treat-

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ment (chiefly merely re-melting) of scrap lead, drosses, and scrap lead alloys, thus yielding metal which had been previously marketed as metal and put into use. Statistics of secondary lead production include lead recovered in the form of lead alloys, for re-use as alloy without extracting the lead from the mixture.

In the United States the production of secondary lead in recent years has been 30 to 40 per cent of that of primary lead. The secondary lead is recovered mostly by small plants which make a business of treating old metals, without handling any ore. There are many of these concerns, each representing a comparatively small investment and with comparatively inexpensive equipment and simple methods of procedure. On the other hand, the producers of primary lead are relatively few in number, but are companies of large capital, extensive plants, and technically complex operation.

Smelter Output.—Lead production of primary smelters in the United States in 1927 totaled about 625,000 metric tons. This figure is 2 per cent less than the 1926 output, but it is hardly likely that the true figures are accurately known within 2 per cent at the present writing, so that the actual output may have been as large as last year, or may have been a few per cent smaller. The 1927 world production of lead apparently increased about 4 per cent over 1926.

World Production.—The United States production represents about 40 per cent of the entire world's production. Mexico is the second largest producer, yielding about one-third as much as the United States. Mexican production registered a large increase in 1927 over the previous year, gaining probably 40,000 metric tons, or 20 per cent. Other important lead producers which made gains in output were Australia (about 10 per cent gain) and Canada (about 7.5 per cent gain). Among the minor producers, Burma and Rhodesia show increases. One of the leading lead-producing countries, on the other hand, showed a pronounced falling-off in its yield, namely Spain. The

fourth largest producer in 1926, recently the third largest, and no longer ago than 1918 the second, Spain, in 1927, dropped to fifth place, having been passed by Canada. Production in Germany, another fairly important producer, also declined somewhat in 1927.

Secondary Lead.—Production of secondary lead in 1927 cannot be stated at this time. In 1926 it amounted in the United States to 252,000 metric tons. This large secondary production, of course, correspondingly reduces the consumption of primary lead, but much more so in some lines than in others, since some uses of lead require metal of higher purity and greater reliability than can be obtained from remelted scrap, while others can use this lower-grade and cheaper material without difficulty. As to the sources of secondary lead, some of the leading uses yield large amounts of recoverable scrap and others yield practically none. Lead pigments are the greatest consumers of metal that can never be used again, while storage batteries return an exceptionally high percentage of their lead consumption to swell the figures of secondary output. The life of a battery plate averages but a few years before the plate finds its way to the melting furnace, and when re-melted it yields a large proportion of the quantity of lead originally used to make it. Cable-covering and building yield smaller amounts of scrap lead.

PROGRESS IN LEAD METALLURGY

Complex Ores.—The most significant trend in lead metallurgy continues to be the increasing use of complex ores. It is the success in treating these ores that has made possible the larger world production, provided enough lead to meet the demand, and kept the price within bounds. This tapping of a previously known but formerly unworkable source of lead has been in a number of cases equivalent to the discovery of new lead deposits.

Strictly speaking, the treatment is one of concentration rather than a metallurgical one, being a process of selective flotation. As an example

of complex ore treatment, the Utah-Apex Company mills a copper-lead-zinc ore and separates it into four products, viz.: lead concentrates carrying 50 to 55 per cent lead, zinc concentrates carrying 50 to 52 per cent zinc, copper concentrates carrying 25 per cent copper, and a product containing 40 to 45 per cent iron. Examples of milling lead-zinc-silver ore in Colorado show an ore carrying 5 per cent lead, 10 oz. of silver per ton, and 25 per cent zinc netting the shipper \$16 a ton, whereas a few years ago such an ore would have been unsaleable, owing to previously unsurmounted difficulties in separating the lead and zinc contained.

Brine Leaching.—A number of plants are trying out leaching of lead-bearing ores and residues with strong brine, usually preceded by a chloridizing roast to convert the lead to soluble lead chloride. This work has now been going on for several years and apparently is very successful, although there seems little tendency to expand the scale of operations.

Soda Refining.—There is little to report concerning smelting and refining methods for lead. The principal matter of interest is the continued successful development of refining by means of molten caustic soda, an improvement over the usual furnace-softening operations.

COGNATE SOCIETIES

AMERICAN IRON AND STEEL INSTITUTE.—75 West St., New York, N. Y.

AMERICAN GAS ASSOCIATION.—342 Madison Avenue, New York, N. Y.

AMERICAN INSTITUTE OF MINING AND METALLURGICAL ENGINEERS.—29 W. 39th St., New York, N. Y.

AMERICAN MINING CONGRESS.

AMERICAN PETROLEUM INSTITUTE.—250 Park Ave., New York, N. Y.

AMERICAN ZINC INSTITUTE.—27 Cedar St., New York, N. Y.

CANADIAN INSTITUTE OF MINING AND METALLURGY.

LAKE SUPERIOR MINING INSTITUTE.

MINING AND METALLURGICAL SOCIETY OF AMERICA.

DIVISION XIII

MANUFACTURES AND TRANSPORTATION

GENERAL CONDITIONS IN MANUFACTURING

By LAWRENCE B. MANN

DIVISION OF STATISTICAL RESEARCH, BUREAU OF FOREIGN AND
DOMESTIC COMMERCE

DEVELOPMENTS

Summary of Year.—Manufacturing output was slightly smaller in quantity in 1927 than in 1926 and was substantially lower in value. A moderate slackening of demand appeared in almost all lines, which resulted in a rather sharp decrease in prices and some curtailment in activity of factories. This recession on the whole was smaller than might have been anticipated considering the rapid expansion of the five preceding years.

The industries which led in the post-war industrial boom were the ones which showed the most pronounced declines during the past year. Both automobile output and construction of buildings were smaller in volume than in 1926, and many other industries such as iron and steel, lumber and plate glass, which supply them with materials, were also less active. The textile, leather and shoe industries which have shared but little in the industrial expansion of recent years, considerably increased their output during 1927, and there were also many advances in prices of leather products.

Despite the curtailment in total manufacturing production during 1927, the aggregate monthly output of factories continued to be relatively stable, and continued to show a relatively small range between maximum and minimum production. This stability of total output was aided by the continuance of a large volume of exports of finished manufactures.

Growth of Manufactures During the Twentieth Century.—The recent publication of complete returns of the 1925 census of manufactures makes it possible to survey the growth of manufacturing industries during the first quarter of the present century. There have been some changes in the scope of the census such as the exclusion of establishments with an output of less than \$5,000 per year in 1921 and later years, but, nevertheless, figures shown in the accompanying table for each census since 1899 give a reasonably accurate picture of the long-time trend.

The most significant development in manufacturing over this entire period has been the increase in production per employee, a development which was under way from the beginning of the century down to the outbreak of the World War, and which has been accentuated in the years since the close of the war. From 1889 to 1909 the number of wage earners in factories increased about 40 per cent, while the physical volume of production increased at least 60 per cent. The increase in factory output since 1919 has been very rapid, and at the same time there has been a decrease in the number of workers employed, so that the increase in average output per work has been exceptionally large. It has been estimated that the output per employee in 1925 was 40 per cent greater than in 1919, a most astounding growth.

This great expansion in the average output of factory workers has been

GENERAL CONDITIONS IN MANUFACTURING

SUMMARY OF MANUFACTURING INDUSTRIES

United States Census Year	Number of Estab- lishments	Wage Earners (Average Number)	Expressed in thousands of dollars				Horse- power
			Wages	Cost of Materials	Value of Products	Value Added by Manufac- ture	
1899	207,514	4,712,763	2,008,361	6,575,851	11,406,927	4,831,075	10,097,893
1904	216,180	5,468,383	2,610,445	8,500,208	14,793,903	6,293,695	13,487,707
1909	268,491	6,615,046	3,427,038	12,142,791	20,672,052	8,529,261	18,675,376
1914	271,822	7,015,136	4,063,210	14,242,415	24,065,766	9,823,351	22,264,343
1919	273,804	9,030,771	10,452,586	37,044,832	61,888,635	24,843,803	29,297,963
1921	195,555	6,937,688	8,192,952	25,154,807	43,427,224	18,272,417	1
1923	195,580	8,768,491	10,999,282	34,480,855	60,258,470	25,777,615	33,056,870
1925	187,390	8,384,261	10,729,969	35,935,648	62,713,714	26,778,066	35,772,628

Source: Bureau of the Census.

¹ Not called for on schedule.

largely due to the increased use of machinery, although it has also been much aided by more efficient management, and by a decided improvement in the education and intelligence of the employees. The increase in use of machinery, indicated by the fact that the total horse-power capacity of prime-movers in factories, was a little more than three and one-half times as great in 1925 as in 1899. During this quarter of a century the average primary horse power per employee doubled and amounted to 4.3 in 1925.

MANUFACTURING DURING 1927

Factory output during the first nine months of 1927 was 1.2 per cent smaller than in the corresponding period of 1926, according to the index prepared by the Federal Reserve Board. Analyzing production by industries the most important reduction was shown by automobiles and amounted to nearly 20 per cent, while production of lumber and iron and steel each declined about 7 per cent, building materials 4 per cent, and pa-

per and printing, food products and non-ferrous metals about 1 per cent each. The largest increase in production occurred in the textile industry, and amounted to about 12 per cent. Petroleum output during the first three quarters of 1927 was about 10 per cent larger than a year earlier, leather products increased 7 per cent, and rubber tires and tobacco manufactures each about 5 per cent.

If adjustment be made for seasonal variations, total factory output increased during each of the first three months of the year, showed a moderate decline in April, and expanded again in May to the highest level of the year. There was a substantial curtailment of production in June and July, followed by a slight expansion in August. In September production again receded and was about 7 per cent smaller than a year earlier. Changes in output for a number of the principal industries during the first nine months of 1927 as compared with the corresponding period of 1926 are indicated in the following table:

	Per Cent Increase (+) or Decrease (-)		Per Cent Increase (+) or Decrease (-)
Cotton textiles	+ 22.5	Sugar, meltings	- 2.9
Finished sole and belting leather...	+ 18.3	Trucks	- 4.1
Cotton consumption	+ 14.3	Pig iron	- 4.4
Wool consumption	+ 13.4	Steel ingots	- 6.1
Silk deliveries	+ 12.8	Wood pulp	- 6.2
Shoes	+ 8.7	Lumber (10 species)	- 6.4
Pneumatic tires	+ 7.2	Washing-machines, shipments	- 8.7
Portland cement	+ 4.7	Structural steel, shipments	- 9.1
Copper, refined	+ 3.7	Newsprint	- 9.8
Wheat flour	+ 1.3	Passenger automobiles	- 19.5
Meat	+ .7	Locomotives, shipments	- 35.1

Although there was a slight diminution in the total volume of manufacturing output during the past year, it is much more truly significant that production was maintained at a very high level for the fifth consecutive year. The huge volume and relative stability of factory output is due primarily to the large buying power of the American people which has resulted from a combination of increased wages and higher dividend rates with declining commodity prices. The consequence of this large volume of production has been a steady improvement in living standards, evidenced by better housing, and increases in the per capita supply of automobiles, washing machines, vacuum cleaners, radios, and other conveniences and luxuries. A particularly noteworthy feature during the past year has been the rapid expansion in sales of electric refrigerators and their installation as standard equipment in many large apartment houses.

Automobiles and Tires.—The production of passenger automobiles during the first nine months of 1927 was 20 per cent less than a year earlier, while truck production decreased 4 per cent. The decrease in total value of output was not nearly so great as the decrease in quantity, as most of the curtailment in sales was confined to cars of the lowest price. Production increased steadily during the first three months of the year and was maintained at a fairly high level during April and May. This was followed, however, by a sharp decline in June and July, and September was lower than in any month since January, being 35 per cent smaller than in April.

The decrease in both production and sales of automobiles during 1927 was very largely due to the rumors in the early part of the year that one of the largest producers of low-priced cars was planning to make a drastic change in its model, and the cessation of production of new automobiles in that company's plants in the early summer. The decline in sales has been largely confined to low-priced cars. Closed cars continued to form a very predominant share of the total

output and sales of trucks and busses have been maintained at a high level. There has also been a very substantial increase in both the quantity and value of automobile exports.

Production of both pneumatic tires and solid tires was about 7 per cent larger in the first three quarters of 1927 than in the corresponding period of 1926. Output of inner tubes, on the other hand, showed a decrease of over 8 per cent. Balloon tires are now standard equipment for practically all makes of passenger automobiles.

CONSTRUCTION

Construction Materials.—The total floor space of buildings for which contracts were let in the first nine months of 1927 was 5 per cent less than in the corresponding period of the preceding year, while the aggregate value of contract awards for all types of construction was practically unchanged. The awards for both industrial and residential buildings were substantially smaller than in 1926, but there were increases in contracts for public works and utilities which include construction of public roads.

As a result of the somewhat reduced volume of actual buildings constructed in 1927 the aggregate output of ten of the most important species of lumber declined 6 per cent for the first nine months of the year as compared with the corresponding period a year earlier; oak flooring production was 15 per cent smaller, shipments of structural steel declined 9 per cent, and output of polished plate glass fell off by about 14 per cent. Output of Portland cement on the other hand was larger by about 5 per cent, in consequence of the increase in highway construction. There were also small increases in the output of face brick and maple flooring.

Iron and Steel.—The decrease in production of automobiles and in the construction of buildings, together with a reduction in orders for railroad equipment resulted in a moderate curtailment of operations at iron and steel mills. Pig iron production in the first quarter of 1927 was at about the same level as a year earlier,

but declined throughout the second and third quarters to a level considerably lower than in the corresponding months of 1926. As a result, the total output for the period of nine months was 4 per cent smaller. Output of steel ingots showed a similar trend to that of pig iron and in the first three quarters of 1927 was 6 per cent smaller than a year earlier. Unfilled orders of the United States Steel Corporation declined during the first six months of the year and were maintained throughout the third quarter at a level about 12 per cent lower than in the third quarter of 1926.

INDUSTRY

Textiles.—The textile industries which have shared but little in the great industrial activity and prosperity of recent years increased their operations substantially in 1927. This expansion doubtless was aided by the low price of cotton which is much the most important raw material. Cotton consumption during the first nine months of 1927 was 14 per cent larger than in the corresponding period of 1926 and was also at a much higher level than in any other recent year. The output of fine cotton goods was 23 per cent greater than a year earlier, and there was an almost equal increase in the production of other finished cotton textiles.

Consumption of both wool and silk increased by about 13 per cent in the first three quarters of 1927 and there was an even greater expansion in our use of rayon. Hosiery production was 7 per cent larger than in 1926, while the orders received by hosiery mills showed an even greater increase. The output of underwear was slightly smaller than a year ago, but this was due entirely to a reduction in stocks as both shipments and new orders were considerably larger.

Leather and Shoes.—The leather and leather goods industries which have been somewhat depressed throughout most of the period since 1920 had a considerable recovery in 1927. This was the only important group of products which showed an advance in prices as well as production during the past year. The out-

put of finished sole and belting leather was 18 per cent larger in the first nine months of 1927 than in the corresponding period of 1926, and production of glove leather showed an equally large increase. The output of finished upper leather, however, was 3 per cent smaller than a year earlier. The number of shoes manufactured was almost 9 per cent larger than in the first three quarters of 1926 and there were 3½ per cent more gloves cut.

Pulp and Paper.—Production of pulp and paper was considerably smaller during 1927 than in 1926, but was larger than in any other recent year. The total quantity of wood pulp ground was 6 per cent smaller in the first nine months of 1927 than in the corresponding period of the preceding year, and the reduction in the mechanical variety amounted to about 12 per cent. The output of chemical pulp, which in 1927 constituted over three-fifths of the total, only declined about 2 per cent. Production of all important kinds of paper, excepting wrapping paper, was smaller in volume during 1927. The most important decrease was in the output of newsprint which was about 10 per cent less in the first three quarters of 1927 than a year earlier. The output of both fine paper and boxboard was reduced by about 4 per cent. Wrapping paper production was about 2 per cent larger than in the corresponding period of 1926.

Miscellaneous.—As is usually the case, there were only comparatively small changes in the production of manufactured foodstuffs. Wheat flour output increased by slightly more than one per cent, and there was an even smaller increase in the output of meat. Sugar meltings on the other hand were about 3 per cent less than a year earlier. Among the chemical industries there were substantial declines in production of ethyl alcohol, fertilizers and acid phosphate, while the output of cottonseed oil was 21 per cent greater than in 1926.

Stocks.—Commodity stocks showed a considerable accumulation during the first three quarters of 1927 as a result of curtailment in factory operations and in consumer buying.

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Stocks of raw materials for use in manufacturing increase by 16 per cent, while stocks of finished manufactures, which showed less than their usual seasonal decline in the spring and summer, averaged 12½ per cent larger than in 1926. Stocks of manufactured foodstuffs, on the other hand, were about 2 per cent smaller on the average than a year earlier.

Failures.—The total liabilities of manufacturing establishments which failed during the first nine months of 1927 amounted to \$152,562,000, which was 34 per cent larger than in the corresponding period of 1926. There was a greater increase in failures of manufacturers than those for trade establishments, but a smaller increase than in failures of agents and brokers.

Exports of Manufactures.—The steady growth of our exports of manufactures, which at present have a value of over three billion dollars annually, has a stabilizing influence on the manufacturing industries of the United States, as business is seldom depressed at the same time in all parts of the world. Exports of all

manufactured articles except manufactured foodstuffs were 3 per cent larger in the first nine months of 1927 than a year earlier, and were 57 per cent larger than in the corresponding period five years earlier. This extraordinary growth has been due to the ever increasing demand from abroad for highly elaborated articles.

The United States is the leading exporter as well as producer of many articles which require inventive genius, intelligent labor, and mass production. For example, in the fiscal year ending June 30, 1927, exports of automobiles, parts and accessories were four and one-half times as large as five years earlier; exports of agricultural machinery and cash registers each increased four times; and exports of construction machinery, mining machinery, rubber manufacture, cutlery, and musical instruments more than doubled in value. There has also been an extraordinary growth in our exports of chemicals in recent years as is indicated by the fact that our exports of coal-tar chemicals were almost three times as large as in the year ending June 30, 1922.

ADMINISTRATION OF THE TARIFF

By ERNEST W. CAMP

DIRECTOR OF CUSTOMS, U. S. TREASURY DEPARTMENT

ORGANIZATION

Collection Districts.—There are forty-seven collection districts of the United States, which include one each in Alaska, Hawaii and Porto Rico. These districts contain three hundred ports of entry, one port in each district being designated as the headquarters port, at which the Collector of Customs, who is the principal customs officer of the district, is stationed.

Appraisers of merchandise are designated and assigned to sixteen of the larger headquarters ports. At other ports certain officers of the Collector's force are designated acting appraisers.

Surveyors of Customs are assigned to the ports of Portland, Maine, Boston, New York, Philadelphia, Balti-

more, New Orleans, and San Francisco, and Comptrollers of Customs to the ports of Boston, New York, Philadelphia, Baltimore, New Orleans, Chicago, and San Francisco.

FUNCTIONS

Business.—Although Customs is one of the oldest branches of the Government, popular conception of the functions of customs goes little beyond the apprehension of smugglers and the examination of passengers' baggage on trains and piers. Duties collected on passengers' baggage, however, amounts to only about three-fifths of one per cent of the total customs receipts. Customs receipts for the fiscal year 1927 were \$605,499,983. Of this sum approximately \$3,883,009 resulted from baggage ex-

ADMINISTRATION OF THE TARIFF

aminations and \$6,938,092 from importations through the mails, while over half a billion dollars was collected on cargo and freight importations.

All imported merchandise, whether dutiable or free, is required to be submitted to customs for examination. If the value of an importation exceeds one hundred dollars a formal entry thereof must be made. Certain exceptions to this requirement are set forth in the Tariff Act of 1922 (Sec. 498), the principal exception covering "articles carried on the person or contained in the baggage of a person arriving in the United States."

Entries.—Merchandise may be entered for consumption; for warehouse; for transportation and exportation; or for immediate transportation without appraisement. A consumption entry is the usual form and is used in cases where it is desired to pay the duty on the arrival of the importation at the port of entry and to secure delivery. If immediate possession of the merchandise is not essential and the importer desires to postpone the payment of duty, a warehouse entry may be made. Under this form of entry, the merchandise is sent to a bonded warehouse and duty is not paid until withdrawal therefrom. Merchandise remaining in bonded warehouse for more than three years becomes abandoned to the Government and is sold at public auction. An entry for transportation and exportation permits merchandise to be shipped in bond through the United States to a foreign destination without the payment of duty; and the immediate transportation entry permits an importation to be shipped in bond from the port of first arrival, without appraisement or the payment of duty, to an interior port, where a consumption entry or warehouse entry may be made.

Documents required to be furnished the office of the Collector of Customs in making a formal entry of merchandise include the entry (Form 7501), declaration of ownership (Form 3347), bond for redelivery, production of missing documents, etc. (Form 7551), delivery permit (Form 7501a), a bill of lading and

consular invoice. A form is now in quite general use, however, combining the entry, declaration, and redelivery bond.

The consular invoice is made out by the shipper on special forms furnished by the American consular officers, the shipper being required to certify to the truth of statements contained in the invoice before the consular officer at the place of manufacture or sale. Copies of this invoice are forwarded to the importer for use in making the customs entry.

PROCEDURE AND APPEALS

Procedure.—When the entry is presented at the custom house, an entry clerk examines it to determine if it is complete and properly executed. He then checks up the calculations and makes an estimate of duties to be paid, which the importer deposits. The delivery permit, stamped to indicate that the duties have been paid, is then given the importer, which, on presentation on the pier, authorizes the inspector to deliver certain packages to the importer and certain other packages, indicated on the permit, to the Appraiser's Stores for examination and appraisement. An examiner at the Appraiser's Stores examines the merchandise and approves the entered values or advances them if he believes them to be too low. While the determination of the rate of duty to be paid is a function of the Collector, an advisory classification of the merchandise is made at the Appraiser's Stores. If no irregularities are discovered, the importer is notified to call for his packages. If irregularities are discovered in the examination packages, the examiner may call on the importer for the redelivery of the balance of the importation, which have been removed from the pier on the delivery permit, which redelivery the importer is bound to make under the terms of his redelivery bond, so-called. After the work at the Appraiser's Stores has been completed, the papers are returned to the Collector, where the duties owing to the Government are computed. This is known as liquidation of the entry. If the liquidated duties are less than the estimated duties which

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have been deposited, the difference is refunded to the importer, and if the liquidated duties are higher, the importer is called on for an additional deposit.

Review.—If the importer is dissatisfied with the appraisement, he may, by appeal, secure a review by the Board of General Appraisers of the appraiser's decision. (Sec. 501, Tariff Act, 1922.) Likewise, a review by the Board of General Appraisers and Court of Customs Appeals of decisions of the Collector may be obtained by the filing of a timely protest. (Sec. 514, Tariff Act, 1922.)

Automobiles and other vehicles arriving in the United States from Canada and Mexico are required to report without delay to the customs officer or custom house nearest the place of such arrival. Failure to report subjects the offender to a fine of \$100. (Sec. 459, Tariff Act 1922.)

Moieties.—The Secretary of the Treasury is authorized to pay an award to any person other than a Government officer furnishing information to a customs officer regarding a violation or contemplated violation of the customs laws, which information leads to a recovery of duties, pen-

alties or fines, the amount of such award to be 25 per cent of the net amount recovered, but not to exceed \$50,000. (Sec. 619, Tariff Act 1922.) In the fiscal year 1927, approximately \$610,366 was recovered by the Government as a result of information furnished under this provision of law.

Information in detail regarding customs procedure may be found in "Customs Regulations 1923," a 792-page document on sale by the Superintendent of Documents, Government Printing Office, Washington, D. C. The various phases of customs work are conveniently segregated in the thirty chapters of this publication.

RESULTS

Customs Collection.—In the fiscal year 1914, the port of New York collected 68% of the total customs receipts of the United States. This percentage in 1922 was 63%; in 1923, 57%; in 1924, 58%; in 1925, 55%; in 1926, 55%; and in 1927, 55%; as this indicates, the greatest increases in customs collections have been at ports other than New York.

The following condensed table of customs transactions indicate the progress of the service:

	1921	1922	1923	1924	1925	1926	1927
Consumption Entries:							
Free	217,053	182,267	209,778	206,154	209,319	226,382	246,257
Dutiable	261,094	310,722	389,511	416,449	428,989	459,726	486,274
Informal Entries	110,758	120,231	145,151	164,102	182,505	196,036	209,002
Mail Entries	409,286	508,590	560,498	838,773	742,917	768,811	786,683
Baggage Declarations	287,108	234,470	284,644	339,541	340,685	383,607	392,128
Drawback Entries	13,455	15,153	11,021	13,971	21,477	24,388	25,230

Assistant Secretary of the Treasury, Seymour Lowman, is in charge

of the Coast Guard, the Customs Service and the Prohibition Service.

THE UNITED STATES TARIFF COMMISSION

By THOMAS O. MARVIN

CHAIRMAN, UNITED STATES TARIFF COMMISSION

AUTHORITY

Fields.—The activities of the Tariff Commission fall within two main classes: first, activities under the general powers of the commission, as defined in the Revenue Act of September 6, 1916, and as further provided

under section 318 of the Tariff Act of 1922; and second, activities under the special provisions of the Tariff Act of 1922 as given in sections 315, 316, and 317 of that act.

Under the General Powers.—The assembling of statistical and other

THE UNITED STATES TARIFF COMMISSION

information, with reference to a wide range of commodities provided for in the Tariff Act, is an important part of the work of the commission. This information will be made available for use of the Congress. For the most part, the information assembled along these lines is not published currently by the commission, but the files of the commodity and other divisions are being built up with a view to supplying information upon short notice. Several commodity surveys have been published during the past year, such as "Woven Fabrics of Wool," "Cotton Sewing Thread," and "Lake Fish." In addition to commodity surveys, most of which will not be published until required by the Congress, special studies have been conducted by the commission under its general powers, the most important of which are mentioned below.

DYE PRODUCTS

Census.—Since 1917 the commission has published annually production, import, export, and price statistics concerning coal tar crudes, intermediates, and dyes, and other synthetic organic chemicals. The Census was begun in 1917, by order of the President, to assist him in the administration of section 501 of the Revenue Act of 1916, which provided that if after five years the domestic production of dyes and intermediates are not as much as 60 per cent of the domestic consumption, the duty of 30 per cent *ad valorem* should no longer be levied. The Census was found to be so much in demand by producers and importers of coal tar products that it has been continued annually since 1917. Incidentally the commission was able to report at the end of the five-year period that the domestic

industry was supplying over 95 per cent of the domestic consumption of dyes and intermediates, instead of the required 60 per cent.

Chemical Dyes.—A table adapted from the Census of 1926, presented at the bottom of this page, shows the development of the chemical dye industry in the United States.

Production and Prices.—Not only has the total production of dyes almost doubled in the last ten years, but the production of high-grade vat dyes, which are fast-colors to sunlight and ordinary laundry chemicals, have increased even more rapidly. The production in 1920 was slightly over 1,000,000 pounds, and in 1926 over 4,000,000 pounds. The average prices of dyes are significant. Beginning with \$1.27 in 1917, the average has gone down steadily to 42 cents in 1926.

OTHER SPECIAL PRODUCTS

Manganese.—During the past year the commission has carried on an extensive investigation concerning manganese bearing ores and products. Deposits of manganese are found in widely scattered portions of the United States, the most important centers of which are in Montana, Arkansas, and Washington. The principal sources of imports of manganese are Georgia, Russia, Cuba, the Gold Coast, and India.

During the war there was a considerable development in the production of manganese in the United States for use as an alloy in the production of steel products. After the war the production declined sharply, and imports were resumed. In the Tariff Act of 1922 ore was made dutiable at one cent per pound on the manganese content. Ordinary 50 per cent ore, therefore, carries a duty of

(Quantities are expressed in millions of pounds)

	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926
U. S. Production of all dyes..	.46	.58	.63	88.	39.	65.	94.	69.	86.	88.
Production of vat dyes (except Indigo) .....	...	..	..	1.16	0.34	1.07	1.76	1.82	2.60	4.03
Exports .....	...	..	..	.....	.....	8.	18.	16.	25.	26.
Imports	4.	4.	3.	3.	5.	4.6
Average prices of all dyes (Cents per pound)	1.27	108.	83.	60.	55.	54.	47.	42.

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\$10 per short ton. Imported ore has continued to supply the American market to a large extent since the passage of the Tariff Act, and the commission has instituted an investigation concerning the present conditions in the industry, with special regard to the costs of producing manganese ore in the United States as compared with import values, and the extent of the development of the American mines in recent years. This report will be made available to the Congress and the public as soon as the assembled data can be analyzed and interpreted.

Cedar Lumber.—Last year the commission published the result of an investigation concerning cedar shingles, and there is in progress a companion study of cedar lumber produced in the Pacific Northwest,—both in Canada and the United States.

EFFECT OF THE FLEXIBLE TARIFF LAW

The work of the commission under section 315 of the Tariff Act of 1922 has continued to be the most important from the point of view of expenditure of time and money by the commission. The activities of the commission under this section of the law are summarized in the following tables showing applications for investigations and investigations ordered.

INVESTIGATIONS ORDERED UNDER FLEXIBLE TARIFF LAW September, 1922, to December, 1927

Schedule	Number of Investigations
1. Chemicals, oils and paints	23
2. Earths, earthenware and glassware	8
3. Metals, and manufactures of . .	6
4. Wood, and manufactures of . . .	4
5. Sugar, molasses, and manufactures of	3
7. Agricultural products and provisions	17
9. Cotton manufactures	4
10. Flax, hemp or jute, and manufactures of	1
12. Silk and silk goods	1
13. Papers and books	1
14. Sundries	5
Total	73

PENDING INVESTIGATIONS

Applications.—The work of the commission in connection with the applications now pending probably is as important as the investigations actually ordered. A special study of the conditions in the industry affected is made for each subject of application received. Regardless, therefore, of whether an investigation is ordered, the commission is in a position to supply the Congress with the pertinent industrial facts concerning these subjects. This informa-

APPLICATIONS FOR ALTERATIONS IN SPECIFIC COMMODITIES

September, 1922, to December, 1927

(Some commodities are the subject of more than one application)

Schedule	Number of Commodities Upon Which Applications Have Been Received	Number of Applications Looking Towards		
		Increase	Decrease	Adjustment of Duties
1. Chemicals, oils and paints	68	40	60	2
2. Earths, earthenware and glassware . .	29	24	13	1
3. Metals, and manufactures of	53	45	15	1
4. Wood, and manufactures of	12	11	7	0
5. Sugar, molasses and manufactures . .	6	1	6	0
7. Agricultural products and provisions	70	102	151 ¹	3
9. Cotton manufactures	14	10	7	0
10. Flax, hemp, jute, and manufactures	5	5	2	0
11. Wool and manufactures of	11	8	7	0
12. Silk and silk goods	1	0	1	0
13. Papers and books	9	6	3	0
14. Sundries	41	30	26	5
Free	4	3	1	0
Total	323	285	299 ¹	12

¹ Includes 119 applications for a decrease in the rate of duty upon wild game birds.

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tion has not heretofore been published, but is available in the files of the commission.

Agricultural Investigations.—Of the investigations in progress during the current year, those relating to agricultural commodities have been of special importance and have been more numerous than the investigations of any other commodity group. A list of the agricultural investigations in progress indicates the extent of the commission's work along this line. They are—Milk and Cream, Peanuts, Soya Beans, Cottonseed, Onions, Flaxseed, Eggs and Egg Products, Maple Sugar and Syrup, Cherries, Fresh Tomatoes, Canned Tomatoes, and Corn.

A total of approximately 5,300 cost schedules were obtained from individual farmers in these investigations, of which about 900 schedules have been obtained during the current year. Other important investigations in progress and nearing completion are—Glue, Edible Gelatin, Vegetable Oils, Window Glass, Plate Glass, Logs produced in the Pacific Northwest, and Monumental Granite.

UNFAIR TRADE PRACTICES

Form C. Bakelite.—The commission has completed an investigation under 316 of the present tariff act in regard to the importation of synthetic phenolic resin, Form C, ordinarily known as transparent bakelite, and used largely in the manufacture of cigarette holders, beads, and numerous other articles. It was alleged by the complainant, among other things, that articles made of synthetic phenolic resin were being imported in violation of the patent rights held by an American producing company. Pending the completion of the investigation a temporary restraining order was issued against imports of this product in pursuance of the provisions of subdivision (f) of section 316. Public hearings were held in May and June, 1926, and a further hearing was held in February, 1927. On May 26, 1927, the commission sent copies of its findings to parties interested. On July 13 an appeal was taken by respondent importers to the United States Court of

Customs Appeals, as provided in section 316, where the matter is still pending. The appeal, under the law, automatically suspends action of the President until a final decision is reached. Meanwhile, a modified temporary restraining order is in effect. This temporary order does not include plain transparent bakelite, but includes only multicolored bakelite of Form C.

Manila Rope.—In June and October, 1926, the commission held public hearings upon the subject of alleged unfair competition in the importation of manila rope. It was alleged that rope represented as "manila rope," which in trade practice is understood to be made of pure manila fiber, was being imported containing fibers other than manila, the adulterant being in many cases sisal fiber. Prior to the hearings, and pending the completion of the investigation, a temporary order was issued on May 19, 1926, under which all rope labeled as manila, but which in fact contained other fibers, should not be imported. Rope containing sisal or other fibers than manila can be imported if so labeled. On April 28, 1927, the commission sent copies of its findings to interested parties. No appeal was taken, and on June 20, 1927, the temporary restraining order was made permanent by action of the President.

COOPERATION WITH OTHER DEPARTMENTS

The commission has cooperated with the Department of State in compiling information concerning the trade and commerce between France and the United States, in connection with the commercial treaty negotiations now in progress between the two countries.

PERSONNEL OF THE COMMISSION

On March 19, 1927, Lincoln Dixon assumed his duties as Commissioner, to succeed Henry H. Glassie. The commission now consists of Thomas O. Marvin, Massachusetts, Chairman; Alfred P. Dennis, Maryland, Vice Chairman; Edward P. Costigan, Colorado; Edgar B. Brossard, Utah; Sherman J. Lowell, New York, and Lincoln Dixon, Indiana.

XIII. MANUFACTURES AND TRANSPORTATION

EXPORTS AND IMPORTS

BY RAY OVID HALL

SENIOR ECONOMIC ANALYST, DEPARTMENT OF COMMERCE

VOLUME AND BALANCE OF TRADE

Movements in Foreign Trade.—Ever since 1921 the volume of our exports and imports has been an uninteresting thing to follow. Its growth has been so steady and so healthy that our foreign trade, as a contribution to our rising prosperity during the period, could be taken pretty much for granted. In 1921, however, there were fireworks. In that year the value of both our exports and our imports dropped about 50 per cent, and our "favorable" trade balance dropped by \$1,200,000,000. The further drop in the trade balance in 1922 set economists to predicting "unfavorable" balances in the near future. Then, to the annoyance of the prophets, the annual trade balance rose, fell twice and rose again. The fiscal year ended June 30, 1927, had an excess of exports of \$716,000,000.

Those who most confidently predict an early era of constantly unfavorable trade balances usually consider only the rising volume of American investments in foreign countries. They learn that we are annually investing abroad more than \$1,500,000,000 and that the dividend on our previous foreign investments is about half as much; the difference, they infer, must be delivered to foreigners almost entirely in kind—in American exports of merchandise. As soon as that dividend exceeds the volume of new American investments, they add, we must accept payment for the difference in an excess of merchandise imports. They do not realize that this condition is already upon us.

Investments.—In 1926, for example, the net yield of our long-term private investments (gross, minus yield of foreign investments in the United States) was estimated at \$528,000,000. The war-debt payments into our Treasury raised the figure to \$723,000,000. When the movement of private funded capital, in and out of the country, was properly analyzed,

it was found that our net export of long-term capital in 1926 was only about \$557,000,000. (See *Balance of International Payments of the United States*, a Department of Commerce publication.) According to the prophets we should have had an unfavorable trade balance of some \$166,000,000; instead, we had a favorable one of \$377,000,000. The prophecy thus failed by more than a half billion.

Factors in Trade Balance.—It is true that our nation may come to a string of annual excesses of imports, soon or late; but again it may not. Between 1876 and 1910 the amount of foreign capital borrowed by the United States was perhaps as much as 4 billions, but our net favorable balance of trade was about 12 billions. The trade balance did not follow the loan then, and it may fail again in the future. Our enormous tourist expenditures abroad, immigrant remittances and foreign charities may continue to outweigh the influence of the capital movements.

Any such speculating about our trade balance is, of course, of theoretical interest only. A nation firmly on the gold standard can have no practical interest in the subject. Rising exports indicate increased business activity; but so also do rising imports, particularly imports of non-competitive raw materials. We should hope for both kinds of prosperity, without much caring about the balance between them. Our tariff system provides prompt and ample relief against unfair competition of foreign products in our market; and our Government organization to facilitate and protect sales of merchandise to foreigners is so efficient as to be the ideal toward which our foreign rivals are still working.

COMMODITY AND GEOGRAPHIC DISTRIBUTION

Manufactures.—Much commented upon in recent years is the increase in our exports of "finished manufac-

EXPORTS AND IMPORTS

tures." The increase has been both absolute and relative. The second most important group in this classification, however, is petroleum products, which perhaps might equally well be regarded as "semi-manufactures." In 1927 the value of our exports of finished manufactures held up very well, despite the lower prices of kerosene and gasoline. The "finished manufactures" classification was saved by the record-breaking export of automobiles in 1927, about \$400,000,000.

Coal and Wheat.—Coal exports declined in 1927 from the abnormal value of 1926, created by the British strike. The value of our wheat exports in 1927 rose, despite lower prices created by the enormous wheat crops of Argentina and Canada. During 1927 each of our three best customers—Canada, the United Kingdom and Germany—became bigger customers. France, the fourth best customer in 1926, lost that place to Japan in 1927. More than a third of all our exports now go to Canada and the United Kingdom.

Other Commodities.—Our largest import during each of the last three years has been crude rubber—roughly about a half billion annually. Raw silk has been second and coffee a close third—each roughly a third of a billion. Sugar has been fourth. During 1927 our rubber imports declined enormously in value and increased greatly in quantity. Coffee imports declined greatly in value, but the quantity changed little. Sugar imports, on the other hand, greatly increased in value and decreased in quantity. Raw silk imports increased notably in both value and quantity.

In 1927 our two largest sources of supply continued to be Canada and Japan. Our purchases from British Malaya (rubber mostly) came third in rank in 1926; but they declined sharply from the 1926 figure, so that the United Kingdom had third place in 1927.

AMERICAN LOANS TO FOREIGNERS

Records.—Our private long-term loans to foreign governments and corporations in 1916 (1,131 millions) established a record not exceeded until

1924. Beginning with 1924, each year has established a new record. The 1926 record was passed in the middle of October, 1927. During the first ten months of 1927, American underwriters publicly offered foreign capital securities of no less than 29 countries. As in 1926, Germany was the heaviest borrower. At the end of November the total of these foreign issues (par value) had risen to \$1,494,000,000. "Direct investments" and private purchases of foreign securities probably raised this figure by about \$300,000,000. Foreign stocks and bonds have become, overwhelmingly, our largest invisible import, being upward of double the total of our tourist expenditures abroad.

INTERNATIONAL GOLD MOVEMENT

Net Outflow.—During the first nine months of 1927, our exports and imports of gold totalled, respectively, 58 and 193 millions. So slight a net movement inward would be hardly worth noting in these times but for the rather popular expectation that the movement would be outward. Indeed, heavy gold shipments, chiefly to Brazil and Canada, in October and November cancelled the import balance of the first nine months and established a net outflow of \$15,000,000 for the eleven months.

Gold Stock.—During the four years 1921-24 our average of gold imports was \$364,000,000. In the two-year period following, there was a small net movement inward. It is commonly believed that we thus acquired more gold than we needed, our gold stock now being almost exactly half of the compiled and estimated world total. The prediction of a heavy outflow would probably have been correct, had our commodity prices risen. This would have stimulated the accumulation of merchandise stocks and might have further raised prices to the point of curtailing our merchandise exports and increasing our merchandise imports, thus tending to necessitate gold exports. With the falling commodity prices of recent periods, however, bank loans have increased less rapidly than bank deposits; and the gold reserve of our Federal Reserve Bank (against com-

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bined deposits and bank note issue) has ranged about 70 per cent for two years. One American economist computes our excess of gold at $2\frac{1}{4}$ billions.

Foreign economists accuse us of "sterilizing" the gold we have received from abroad. In the case of "earmarked" gold (not gold deposits, as such) held here as the external reserves of foreign central banks, the "sterilization" has been very direct. Federal Reserve Bank policy has segregated such gold, specifically to prevent its serving as a basis for credit inflation.

Foreign Gold.—Our international gold shipments no longer serve solely to settle the balance of our visible and invisible trade. In January, 1927, for example, we imported gold from 30 countries and exported it to 9 countries. At the end of 1926, when the last survey was made, foreigners had on deposit in American banks some $2\frac{1}{4}$ billions. Much of this gold was thus shipped here, or held here, "for the payment of nothing"; and it may be withdrawn at any time regardless of the state of our international trade. Potentially at least these foreign deposits are an incentive to domestic inflation; and, to the charge of "sterilization," our economists replied further by pointing out that our banks pay to foreign deposits perhaps \$50,000,000 yearly in interest for foreign gold not needed in our national economy.

BALANCE OF INTERNATIONAL PAYMENTS

Invisible Trade.—The annual balance of payments of the Department of Commerce now attempts to list even the minor items of the invisible foreign trade of the United States. These more exhaustive surveys indicate that the annual turnover in our

international transactions is something like \$18,000,000,000—an average of more than \$150 for every adult and infant in the land. Our per-capita private investment abroad is about an even \$100—one share of stock at par. Besides, the debt to our Treasury by certain of the former Associated Powers works out to nearly \$100 per capita, although its present worth is much less. Furthermore, some 350,000 or 400,000 American tourists visit overseas countries each year. Such figures illustrate the extent to which our former isolation is being impaired.

Exchange Cancellation.—The efficiency of "international exchange cancellation" in modern times is seen by noting that our colossal turnover of approximately 18,000 millions is effected by actual gold shipments of only 200 or 300 millions. The rest of the payments are effected by the offsetting and cancelling of debits against credits by international bankers.

Investigations.—The more accurate balance-of-payment investigations of recent years, besides showing us more clearly the magnitude and character of our economic stake abroad, have done much to popularize foreign trade principles. These investigations may even have sharpened the wits of those purporting to speak with precision in this field. They have brought out the vast difference between "our net growth as a creditor nation" and "our net export of capital." They have revealed and measured the new forces behind our gold movements. They show, too, why the war-debt payments to our Treasury are quite as likely to detract from our merchandise exports as to promote our merchandise imports; and why the invisible items may easily absorb the entire effect of the payments.

CONDITIONS OF INTERNAL COMMERCE

By A. L. BUSH

BUREAU OF FOREIGN AND DOMESTIC COMMERCE,
DEPARTMENT OF COMMERCE

Industrial Production.—Analyzed in calm retrospect, 1927 presents unusual combinations of the various elements generally classed together as

"business indicators." It must be remembered that 1926 held the highest total production of industrial commodities of any year in the history of the United States. Compared with the peak record, the present year has shown some recession in business. During the early months of 1927 industrial production continued near the high level of the preceding year. The normal summer slump was not followed by a noticeable Autumn recovery in the case of several leading industries. Commodity stocks on the whole, have maintained a higher level as compared with last year and, largely due to hand-to-mouth buying, unfilled orders reached a lower level than has been reported since 1921. A comparative summary for a selected list of important movements in internal commerce reveals for this year a decrease from 1926 in production, employment and car loadings.

Temporary Recession in Business.—Automobile production during the first ten months of this year showed a marked decrease from corresponding months of 1926. Voluntary inactivity at the Ford factories accounts for considerable loss in production. A lenient installment sales and exchange policy in recent years has enabled consumers more frequently to substitute new cars for those not of the latest model. These used cars are purchased by many who in the absence of this opportunity would save money to apply on a new car. It is being commonly recognized that installment selling, when properly used, constitutes on the whole a valuable contribution to modern economy.

On the other hand, it is obvious that this system, which tends toward immediate stimulation of sales, must, at some period of adjustment and in some instances even when properly administered, be directly or indirectly responsible for a loss in distribution, and this loss in turn be reflected in decreased production. The industry which leads in installment sales naturally leads in reaping both the benefits and the disadvantages of this policy. The temporary decline in automobile output can, in one way and another, be traced to conditions within the industry. This self-in-

flicted slump unfortunately has adversely affected some other industries, particularly those which are dependent on sales of material to automobile manufacturers.

Strikes and Floods.—While not having a serious national effect, the coal strike at the bituminous mines has had a retarding influence on business in some States. The Mississippi and New England floods were also extremely detrimental to local conditions. Unsatisfactory production in the iron and steel industry, carried over from last year, has continued through the first ten months of 1927. (Unfilled steel orders have increased since the last of October.) This condition is both a cause and effect of declines in related lines. Decreased activity in these industries contributed to unemployment, which has existed to a marked degree during recent months.

Transportation.—Available reports show freight traffic for the first nine months of 1927 on a level with corresponding months of last year; a reduction of 4% in passenger traffic; and 2.3% reduction in operating revenues. This decline in revenues is traced to decreased traffic and also to a decline in average receipts per unit of traffic.

The freight traffic handled by the railroads in 1927 cost the shipping public \$900,000,000 less than would have been the cost under rates in effect in 1921, as reported by the Bureau of Railway Economics. This year the railroads have continued to improve their facilities by the input of large sums of new capital. The high standard of efficiency in transportation service has resulted in vast savings to manufacturers and distributors. These economies are ultimately reflected in prices to consumers.

Price Status.—One of the outstanding features during the early months of 1927 was the steady decline in wholesale prices. Since the middle of the year, however, there has been a steady rising of wholesale prices. The absence of either a sharp decline or sudden upward movement indicates general stability in business activity. Farm prices this year aver-

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aged 6 or 7% above prices in 1926. With farm prices higher and consumer prices tending to decline there is a noticeable advancement in the farmer's purchasing power.

Credit and Banking.—Throughout 1927, and particularly during the late months, bank debits remained above last year. The number of bank loans increased, with interest rates lower. This has been an important factor in sustaining business prosperity.

Distribution.—Comparable reports for 1926 and 1927 indicate that department store, chain store, and mail order sales have all increased over sales for last year. The increase in chain store business is paralleled by an increase in the number of chain stores. Mail order increases are attributable in part to the advance in buying power in rural districts.

An analysis of all combinations of 1927 business trends leads to the conclusion that improved methods of distribution have been in effective operation. In the absence of a national census of distribution, however, there are no basic statistics from which to determine accurately the volume of sales by any method of distribution or the total volume of domestic business for any year. Consequently there exists at the present time no yardstick by which to measure what is being accomplished by the distributor's efforts toward constructive application of principles of trade efficiency. At best the present-day distributor is a beginner student of scientific marketing, and remains outclassed by the manufacturer in efficiency. It is undeniable that our distribution processes on the whole are still relatively expensive and offer unlimited opportunities for uncover-

ing wasteful practices and effecting much needed economies.

Forecast.—One of the conspicuous developments of this year has been the high rate of activity in the construction field. So closely is construction connected with a number of other industries that this steady volume of building carried on throughout the country can be regarded as an important stabilizing factor in 1927 business. Present indications are that this activity will continue.

With unfilled steel orders on the increase since October, the outlook for the steel industry appears more promising than for some time past. Automobile production is decidedly on the increase, and this will undoubtedly be reflected in renewed activity in related industries. Improved conditions contributing to increased employment should stimulate activity in wholesale and retail trade. The elasticity of credit through the Federal Reserve system contributes to a cheerful outlook.

Aside from these satisfactory trends in business indicators, there is a present tendency toward intensive study of scientific merchandising, a nation-wide growth in understanding of the universal advantage of waste elimination, and increased recognition of the progress resulting from the application of business statistics and commercial data available from the Government, Trade Associations, and other agencies of commercial research. These tendencies are underlying influences for the stabilization of business, and denote definite progress toward future constructive cooperation between producers and distributors for mutual benefit and the advancement of commerce.

RAILROADS

By R. H. AISHTON

PRESIDENT, AMERICAN RAILWAY ASSOCIATION

RAILROAD FACILITIES

Scope of Service.—The steam railroad systems of the United States as a whole constitute a stupendous ma-

chine for manufacturing transportation service. There are about 1,959 operating lessor and industrial railroad companies in the country. About

500 of these are either industrial, narrow gauge or small railroads that have only local significance and are not of fundamental importance in the general national transportation system.

Class I Roads.—There are in practical operation between fourteen hundred and fifteen hundred remaining companies, in which are 175 Class I railroads, that is, those having operating revenues in excess of one million dollars per year, and thirteen important switching and terminal companies. These Class I roads and terminal companies, making in all 188, operate about ninety per cent of the mileage, originate about ninety-one per cent of the freight traffic, probably a higher percentage of the passenger, mail and express traffic and, due to the length of haul, receive about ninety-six per cent of the total operating railway revenues of the country.

The first main track of Class I railroads as of December 31, 1926, amounted to 237,055 miles. In addition, other main tracks totaled 41,537 miles and yard tracks, sidings, etc., made up an additional 116,353 miles.

The total number of railway employees of Class I roads in 1926 averaged 1,779,281. The aggregate compensation of all employees during 1926 amounted to \$2,946,000,000. The number of hours worked during 1926 by these employees was over 4,670,000,000 hours.

Rolling Stock.—These Class I railroads owned in November, 1926, 2,345,447 freight cars, with an average carrying capacity of 45.19 tons. As of November 1, 1927, they owned 2,324,988 cars, with an average carrying capacity of 45.60 tons. The number of passenger cars in service as of December 31, 1926, was 54,773.

The number of locomotives owned by these Class I roads in November, 1926, was 62,829, with an average tractive power of 41,548 pounds. As of November 1, 1927, these roads owned 61,305 locomotives, with an average tractive power of 42,497 pounds.

Property Investment.—The property investment of these roads as of

December 31, 1926, was \$23,202,912,213. In addition, they had in materials and supplies an investment of \$551,694,794, and of cash on hand \$535,589,781.

During the past seven years, or from the beginning of 1920 to the end of 1926, new capital invested in railway property aggregated \$5,200,000,000. During the first nine months of 1927 the total new investment was \$570,000,000, while indications for the year of a total capital outlay approximate \$750,000,000.

Capital Expenditures for the first nine months of 1927 are as follows:

Item	9 Months Ended Sept. 30, 1927
Equipment:	
Locomotives	\$ 53,721,000
Freight train cars	104,565,000
Passenger train cars	31,383,000
Other equipment	15,323,000
Total equipment	\$204,992,000
Roadway and Structures:	
Additional track	\$108,002,000
Heavier rails	35,199,000
Additional ballast	10,669,000
Shops and engine houses	28,102,000
All other improvements	183,251,000
Total roadway and structures	\$365,223,000
Grand Total	\$570,215,000

TRAFFIC

Freight.—The railroads handled freight traffic in 1926 greater than ever before recorded. The previous peak year was 1923, but in 1926 freight traffic increased over 1923 by seven per cent in terms of revenue car loadings. The net ton miles, which includes non-revenue freight, in the year 1926 also broke all previous records, being seven per cent greater than in 1925 and 6.8 per cent greater than in 1923.

For the forty-six weeks of 1927 ending November 19th, revenue freight car loadings amounted to 46,700,894 carloads. As compared with the loadings for the same period of 1926, it was a decrease of 639,543 cars, or 1.4 per cent. The best forecast that can be made for the entire year 1927 is that the aggregate net ton miles will not be greater than

480,000,000,000. This will represent a decline of more than one per cent under 1926.

The record-breaking traffic for 1926 was handled by the railroads without substantial shortage and to the general satisfaction of all shippers. The President of the United States said in his message to Congress in December, 1926:

"One of the large contributing causes to the present highly satisfactory state of our economic condition is the prompt and dependable service, surpassing all our previous records, rendered by the railroads."

The high level of dependable and adequate service has been maintained by the railroads in 1927. Adequate transportation facilities have been afforded to practically every shipper in the country.

Passenger Traffic on the steam railroads of the country has been declining for several years. The 1926 passenger traffic ran below that of 1925 and 1925 below that of 1924. In no year since 1920, with the exception of 1923, has there been anything but a decline in passenger miles under the next preceding year. The year 1927, consistent with this trend, shows a decline from 1926. For the first eight months of this year, revenue passenger miles of Class I roads aggregated 22,854,000,000 as compared with 23,908,000,000 for the corresponding period in 1926. If this decline continues to the end of the year, the passenger traffic for 1927 will be the lowest of any year since 1916 and will show a decrease from 1926 of 4 per cent.

SERVICE

Car Supply.—The railroads have been able to furnish transportation facilities to meet practically every demand made upon them by the shippers of the country. In the first three months of the year they met adequately the heavy demand upon coal cars to move the abnormal amount of coal, part of which was going into storage in anticipation of the bituminous coal strike of April 1st. They likewise have met the demand created by a heavy grain movement in the northwestern states by furnishing ample box cars to haul

this grain. During the year there was uniformly a good box car supply throughout the country and there is nothing on the horizon in connection with that supply to cause any concern.

The trend toward an increased demand for refrigerator car service of recent years continued during 1927. This demand originates from the producers of perishable products, from the potato growers of Maine, the citrous fruit and watermelon growers of the Southeast, the citrus fruit and grape growers of California and the apple growers of the Northwest. With the exception of a brief period in October, there was no indication of a shortage in refrigerator cars.

Shippers Regional Advisory Boards, whose organization was completed last year, have continued to function during 1927 with an increasing interest shown in all sections of the country. There is this increasing interest in the face of practically perfect railroad service which gives evidence of a deep-seated interest in the purposes of these boards.

The second issue of the quarterly forecast of anticipated freight car requirements for twenty-seven principal commodities as reported by the various committees of the Regional Advisory Boards was issued from the Washington office of the Car Service Division on October 12 covering the fourth quarter of 1927. Some nine million carloads were involved in this forecast and the Regional Advisory Boards estimated a decrease of 1.9 per cent in such loadings for the fourth quarter of 1927 as compared with a similar period in 1926. These forecasts enable the managements of the railroads to have a more complete advance knowledge from reliable sources of the transportation requirements they will have to meet and are thus enabled more intelligently to take care of them.

FLOODS

Mississippi.—The year has witnessed two disastrous floods affecting the railroad facilities of the country. One of these was the great Mississippi flood last Spring which affected some 3,000 miles of railroad in that region.

The damage to physical property of the railroads exceeds \$10,000,000. Since the flood has receded there has been great activity in restoring transportation service in the area affected. The end of the year will probably see this work of railroad rehabilitation very largely completed.

New England.—A more recent disaster was the flood which occurred in New England, affecting 400 miles or more of railroads in that district. It will be a heavy financial burden upon the carriers serving the New England district to restore their properties and resume the high level of service which they were formerly affording these communities.

RATES AND EARNINGS

Rates.—There has been during the year a fair stability of railroad rates. Under the provisions of the Hoch-Smith Resolution the Commission has continued its investigation of the entire rate structure of the country and has made one decision affecting the haul eastward of California fruit, with the exception of apples, which decision requires a reduction in rates because of a depression in an agricultural industry. The effective date of the decision was postponed until December 10.

Analysis indicates, however, that the average receipts per ton mile secured by the railroads in 1927 are somewhat below those for the previous year. For the first eight months of 1927 freight receipts per ton mile were lower by one and one-tenth per cent than in 1926. If the final returns for the year 1927 show the same proportionate reduction in the levels of freight rates as in the first eight months, the average receipts for the year will be 16 per cent less per ton mile than in 1921.

Earnings.—Corresponding to the record traffic handled in 1926, the railroads earned in that year the largest net operating income of any year in history. Their rate of return on investment for 1926 as a whole was 5.13 per cent. The railroads reported for that year the largest property investment of their history and for 1927 their property investment has continued to increase. Their net

operating income, however, fell more than \$95,000,000 during the first ten months of 1927. The rate of return on property investment for the same period was 3.61 per cent. The net railway operating income of Class I railroads in 1926 amounted to \$1,213,-089,966.

REGULATION

Valuation.—The Valuation Act requires the Interstate Commerce Commission to make a physical valuation of all railroad property devoted to and used in the public service. It became a law in 1913. Since that time the Commission has been working on the subject of valuation. Principles of valuation to be used in determining the true value of railroad property and to serve as a rate base have not yet been determined by the Supreme Court.

In March, 1927, the Commission issued an order for the St. Louis & O'Fallon Railway Company to pay a stipulated amount under the recapture provision of the Transportation Act. This railroad, which has protested the value placed upon its property by the Commission, has been seeking an injunction to prevent the order of the Commission from becoming effective. This injunction case has been heard by a special three-judge court sitting in St. Louis. The decision of this court is awaited with great interest because it is thought that at last the courts may determine the principles of value to be applied to railroad property.

Consolidation.—The Transportation Act of 1920 provided for consolidation of railroad property into a limited number of systems. Some movement in this direction has taken place during the past few years. In 1927 there were four important cases before the Commission. One of these had to do with railroad properties in the Southwest, the Kansas City Southern, Missouri-Kansas-Texas and the St. Louis Southwestern. The decision of the Commission in this case refused the application, but the case still remains open pending changes and modifications in the petition which may meet the Commission's objections.

Another case was that of the Chesapeake & Ohio, which sought stock control over the Erie and Pere Marquette roads. This case has been heard by the Commission but not yet decided. Another case was that of the New York Central seeking to complete consolidation of the properties which they now control. This case also has not been decided by the Commission. A fourth case is the petition of three Northwestern roads, the Burlington, the Northern Pacific and the Great Northern, to merge their properties. This case is in process of being heard.

Motor Transportation.—The growing importance of motor transportation has led to the creation of a Motor Transport Division in the American Railway Association during the year. It was felt that such a new division was made necessary by the increase in the number of railroads that operate buses, which now are about sixty.

RAILROAD LEGISLATION

Consolidation Bill.—No important railroad legislation was passed during the last session of Congress, although a large number of bills affecting the railroads was introduced into both Houses. Particular interest was aroused by the Railroad Consolidation Bill introduced in the House by the Chairman of the House Committee on Interstate and Foreign Commerce, upon which extensive hearings were held. A modified form of this bill was reintroduced on March 3rd, the day before the session closed, accompanied by a public statement by Chairman Parker that he hoped there would be a full discussion of its provisions during the recess of Congress.

The President in his message to

Congress, presented December 6th, has urged legislative action for making possible permissive or voluntary consolidation of railroads as follows:

In order to increase the efficiency of transportation and decrease its cost to the shipper, railroad consolidation must be secured. Legislation is needed to simplify the necessary procedure to secure such agreements and arrangements for consolidation, always under the control and with the approval of the Interstate Commerce Commission. Pending this, no adequate or permanent reorganization can be made of the freight-rate structure. Meantime, both agriculture and industry are compelled to wait for needed relief. This is purely a business question, which should be stripped of all local and partisan bias and decided on broad principles and its merits in order to promote the public welfare. A large amount of new construction and equipment, which will furnish employment for labor and markets for commodities of both factory and farm, wait on the decision of this important question. Delay is holding back the progress of our country.

A bill to carry out the President's suggestion was introduced into Congress in the early days of the session.

Bus and Truck Regulation.—In 1926 the Interstate Commerce Commission held nation-wide hearings on the subject of motor bus and truck regulation. The purpose of the Commission was to secure information to serve as the basis of a recommendation from the Commission to Congress with respect to the subject of regulating motor buses and trucks. No report has yet been issued by the Commission, but the announcement has been made that an Examiner's report will be made public and that this report is assigned for oral argument beginning January 16, 1928, at the office of the Interstate Commerce Commission in Washington. Later, the Commission will draft a final report with recommendations to Congress.

HIGHWAYS AND MOTOR ROADS

By THOMAS H. MACDONALD

CHIEF, BUREAU OF PUBLIC ROADS, DEPARTMENT OF AGRICULTURE

FEDERAL AID

Mileage of Rural Roads.—According to the best available estimates there were approximately 3,006,000

miles of public roads in the United States on January 1, 1926. This mileage includes roads of all classes outside the limits of municipalities,

and is made up in very large part of local roads of small importance, many of them mere rights of way established by law in the States of the Middle West on each section line. The roads which accommodate by far the greater part of the rapidly growing traffic of motor vehicles are comparatively limited in mileage and, in the main, are included in the Federal-aid or State highway systems, although the more important county and local roads, especially in metropolitan areas also accommodate a very considerable and growing traffic.

The Federal-aid system which includes, as a whole, the roads of highest traffic importance, was designated jointly by the Federal and State highway authorities following the passage of the Federal Highway Act in 1921. This system, which is limited by law to 7 per cent of the total highway mileage of record at the time the law was enacted, now includes approximately 186,000 miles, a mileage which may be increased under provisions of the law to approximately 200,000 miles by future designations. In most instances the roads selected for inclusion in the Federal-aid system have also been designated by the States as units in the several State highway systems, but these latter systems are the more extensive, including in addition to the Federal-aid sections others which are not included in the Federal scheme. In the aggregate these systems of the States included approximately 275,000 miles on January 1, 1927.

Local Roads.—All roads not included in one or the other of the foregoing main systems are county or local roads, and with few exceptions are of less importance than Federal-aid and State roads. The mileage of roads of this general class on January 1, 1926, was approximately 2,731,000 miles.

STATUS OF ROAD IMPROVEMENT

Selection.—All roads included in the Federal-aid highway system are eligible for improvement with Federal monetary aid. The improvement is carried out under the immediate direction of State highway departments subject to the approval of the Federal

Bureau of Public Roads, acting for the Secretary of Agriculture, who is charged with the administration of the Federal Highway Act; and any amount not exceeding 50 per cent of the cost, or \$15,000 per mile, may be paid by the Federal Government.

On November 1, 1927, the roads of this system which had been improved with Federal assistance reached a total of 67,775 miles, and on the same date other roads aggregating 9,466 miles were under construction, and, 1,700 miles had been approved for construction in the immediate future, making a total of 78,941 miles already improved or in course of improvement with Federal aid.

As roads included in the Federal-aid system are also improved by the States without Federal assistance, and as the mileage thus improved is approximately equal to that jointly financed, the improved portions of this, our major highway system, now exceeds two-thirds of the total designated mileage, and approximately 60 per cent of the entire mileage is surfaced with materials varying, according to the needs of traffic, from mixtures of sand and clay constituting so-called sand-clay surfaces to the most durable types of pavements.

The State highway systems which, as previously stated, are coincident with, but more extensive than the Federal system, are improved, as a whole, to nearly the same degree. On January 1, 1926, the total of 275,000 miles then embraced in these systems included 26,785 miles improved by grading and draining, and 144,854 miles of surfaced highways, the types of surfacing varying, as in the case of the Federal-aid system, from sand-clay to durable pavements. A year later—January 1, 1927—the aggregate mileage of the State highway systems had been increased to 287,900 miles, largely by transfer of the additional mileage from the local system; and on this later date 163,000 miles, or approximately 57 per cent, were surfaced and 28,550 miles were adequately graded and drained but not surfaced. The latest available statistics of county and local roads are those of January 1, 1926. On that date, as previously stated, there

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were approximately 2,731,000 of such roads, of which 376,406 miles or approximately 14 per cent were surfaced, and 243,400 miles were improved by grading and drainage only.

CONSTRUCTION

Types of Surfaced Roads.—In each of the systems mentioned the surfaced roads are of various types, of which the principal are sand-clay, gravel, waterbound and bituminous macadam surfaces, and sheet asphalt, bituminous concrete, Portland cement concrete, and brick and other block pavements. Of these several types, the sand-clay, gravel and waterbound macadam with the unsurfaced but graded and drained roads are frankly regarded as temporary or transitory, to be replaced by a more durable type when traffic reaches a sufficient volume to require and justify such replacement. The other types—bituminous macadam, sheet asphalt, bituminous concrete, Portland cement concrete, and brick and other block pavements—are classified as durable,

and are suited to the needs of heavy motor traffic.

According to the latest available statistics for each of the three general highway systems, previously mentioned, roads of the Federal-aid system are classified as 67 per cent temporary or transitory and 33 per cent durable; those of the State systems are similarly classified as 83 per cent transitory and 17 per cent durable; and a similar grouping of the county and local roads includes in the temporary classification all but one per cent of the total. This classification serves to indicate as accurately as is possible, perhaps, the relative degree of improvement of the three systems.

Classification.—In the table below the total of 3,006,000 miles of road in the country, segregated as of the state and local systems, respectively (the former including the Federal-aid system) is classified by type of surface, as of January 1, 1926, the most recent date for which the complete statistics are available.

CLASSIFICATION OF HIGHWAYS BY TYPES, AS OF JANUARY 1, 1926

Type	State Highways Miles	Local Roads Miles	All Highways Miles
Unimproved	103,271	2,111,326	2,214,597
Graded and drained	26,786	243,440	270,226
Sand-clay	11,026	58,210	69,236
Gravel	68,771	222,512	291,283
Waterbound macadam	16,709 ¹	67,128 ²	83,837 ²
Bituminous macadam	12,105	10,490	22,595
Sheet asphalt	853	1,921	2,774
Bituminous concrete	4,560	3,420	7,980
Portland cement concrete	27,644	10,106	37,750
Brick and other block pavements	3,185	2,618	5,803
Total	274,910	2,731,171	3,006,081

¹ Includes surfaced-treated macadam.

² Includes surface-treated gravel and macadam.

Annual Rate of Improvement.—For several years past road construction in the United States has proceeded at the rate of approximately 68,000 miles per annum, of which the surfaced portions have amounted to approximately 37,000 miles. Of these approximate totals, 23,000 miles, including 17,000 miles of surfaced roadways, have been constructed by the States with and without Federal Aid, and 45,000 miles, of which 20,000 miles have been sur-

faced, have been built by the county and other local governments. The approximate rate of Federal-aid road construction is 9,000 miles a year, including 6,500 miles of surfacing.

FINANCE

Expenditures for Construction and Maintenance.—Since 1921 the annual expenditures for all rural road construction and maintenance have exceeded a billion dollars, a large and increasing proportion of

HIGHWAYS AND MOTOR ROADS

which is provided by the taxes levied on motor vehicles and motor fuel. Large as it is, this expenditure is only half of the annual expenditure by owners of motor vehicles for gasoline alone. In this fact there is a suggestion of the reason for the public approval and economic wisdom of the highway expenditures, since the money thus invested results in a reduction of the cost of gasoline and other operating expenses of motor vehicles which demonstrably exceeds the expenditure.

In 1925, the most recent year for which complete statistics are available, the expenditures of the State highway departments (including Federal aid) amounted to \$649,125,101; those of the counties and other local governments were \$639,814,606. These expenditures are classified according to their purpose.

By State highway departments:	
Road and bridge construction	\$386,966,871
Road and bridge maintenance	119,303,560
Administration and engineering	30,607,047
Interest and principal of bonds	50,537,901
Equipment and miscellaneous	61,709,722
Total	\$649,125,101

By counties and other local governments:	
Road and bridge construction	\$264,965,764
Road and bridge maintenance	196,573,516
Administration and engineering (when reported)	10,096,000
Interest and principal of bonds	125,877,085
Equipment and miscellaneous	42,302,241
Total	\$639,814,606

Grand Total\$1,288,939,707

In the same year the taxes and other sources of income which supported the above listed expenditures were as follows:

Source	Amount	Per Cent
State income:		
Balance from preceding year	\$115,656,721	14.8
Bonds	141,402,022	18.1
Highway taxes	21,489,004	2.8
Appropriations	33,390,642	4.3
Federal aid	92,180,406	11.8
Motor license fees	199,845,163	25.6
Gasoline taxes	89,328,340	11.5
Miscellaneous	86,788,994	11.1
Total	\$780,081,292	100.0
County income:		
Balance from preceding year	\$97,895,087	12.6
Bonds	144,413,116	18.5
Taxes and appropriations	412,825,227	52.8
Motor license fees	46,545,445	6.0
Gasoline taxes	24,833,979	3.2
Miscellaneous	54,399,875	6.9
Total	\$780,912,729	100.0
Grand Total	\$1,560,994,021	

ON THE ROAD

Usage of Roads by Motor Vehicles.—The receipts of gasoline taxes now imposed by all but two States provide a means by which it is possible to form an approximate estimate for the first time of the stupendous usage of roads and streets by motor vehicles. Using the receipts from this modern tax as a basis of judgment it is estimated that the consumption of gasoline by motor vehicles during 1927 will amount to approximately 10,720,000,000 gallons,

which at 12 miles per gallon (the approximate average consumption by vehicles of all makes and types) would indicate that the annual travel by motor vehicles amounts at present to over 128 billion vehicle-miles, an almost inconceivable figure. Yet large as it is it must be more than doubled to obtain a measure of the passenger-mileage for which the automobiles and improved roads and streets are responsible. This tremendous annual passenger movement by highway passed the rail movement some years

ago and is now approximately eight times as great.

Numbered United States Highways.—Of special interest to all owners of motor vehicles is the network of principal interstate and transcontinental highways, known as United States highways, recently designated by agreement between the highway authorities of all States and the Federal Government. There are approximately 97,000 miles of such highways comprising the most direct and feasible interstate and transcontinental connections, and a plan has been adopted and is rapidly being put into effect, whereby the routes which compose this important network will be uniformly designated by numbers and clearly marked with warning and danger signs in all States.

In this system, which is made up of the most important sections of the Federal-aid and State systems, there are 182 routes, and each route will be marked throughout its entire length in all States traversed by the same distinctive number, displayed on a white, shield-shaped marker. All east and west routes will be designated by even numbers, the more important in multiples of 10, as 10, 20, 30, etc. The north and south routes will be designated by odd numbers, and the more important of these roads will be indicated by two-digit numbers ending in one or five, as 11, 15, etc.

For the guidance of travelers all of these routes will be marked with standard direction and warning signs, which will be readily distinguishable

by their shape and color as well as by the warning or information printed upon them, and will thus indicate at a glance the nature of the danger to be avoided or the character of the information they carry.

Danger Signs.—All danger and warning signs will have a yellow background and black lettering. These will be made in four shapes indicative of different degrees of danger. Thus, an octagonal sign will be used to give warning of such extreme danger as to require a complete stop. A round sign will be posted at all railroad crossings. Diamond-shaped signs will give notice of such dangerous conditions as curves, steep grades, narrow bridges, etc.; and square signs will be posted at points of occasional danger such as approaches to schools, churches, hospitals, etc.

Route Markers.—All directional and information signs will be white with black lettering, and all will be rectangular in shape. Those calling attention to legal speed limits will be in the form of a vertical rectangle; all others will have their longer dimension horizontal. These route markers and signs are now in course of erection. In 19 States their placement has already been completed, and in all but eleven of the remaining 29 the work of signing is partially completed. As rapidly as possible this important and useful work in the interest of safe and expeditious travel will be carried out in all the States of the Union.

MOTOR BUS SERVICE

By CARL W. STOCKS

EDITOR, *Bus Transportation*

QUALITY OF SERVICE

Higher Standards.—In 1927, though the total number of new buses put into service failed to keep pace with the increment of increase in previous years, it is not an indication that the industry as a whole is decreasing in importance in the transportation world. Buses are being better built—are more substantial,

more comfortable, and more popular with the riding public, than ever before. Bus operating companies are also keeping their vehicles in better condition mechanically, and are making every effort through adequate maintenance and driver training, to keep pace with the demand of the riding public for safe transportation. Growth during the year was,

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therefore, in stability rather than in enormous expansion.

Buses and Mileage.—Some idea of the present extent of the bus industry can be gained from the fact that the total number of route miles covered by buses in the United States is more than double that of the steam railroads and electric railways combined. On January 1, 1927, bus routes totaled 607,293 miles of which 270,068 were in common carrier service. Steam railroads on that date were operating 251,318 miles of route and electric railways, 42,912. The number of buses owned by motor carriers and available for operation at the close of 1927 can be conservatively estimated at 90,000. On January 1, 1927, a survey conducted by *Bus Transportation* indicated 80,000 vehicles in service. Of these 80,000 the common carrier field claimed a majority, the number for that group being 41,809. This figure compares with a total of 37,500 on January 1, 1926. The total number of passengers carried by buses in city service in 1927 will run well over 2,200,000,000; for the entire industry, over 3,000,000,000. Other figures of interest, showing the number of buses added each year since 1925 and divided into classes of service, are given in the table inserted at the foot of this page.

SCOPE OF SERVICE

City and Country.—Broadly speaking, the service rendered by common carriers can be divided into two groups, the intercity and the city. In the first of these is included the services connecting two or more distinct communities. City service, of course, includes lines operated within city limits and to contiguous suburban districts. Experience has already indicated that wherever improved highways have been built, the intercity bus follows to render service even to communities and country districts which otherwise would have no public transportation.

Railroad Buses.—That the rail carriers are appreciating the possibilities of the bus is shown by the fact that the number of buses operated by electric railway companies as of September 1, 1927, was 8,389. This is 1,831 more vehicles than were operated by this class of carrier in September, 1926. The steam railroads, also, have increased their use of buses during 1927. The Baltimore & Ohio Railroad, early in the year, established bus service from points in New York and Brooklyn to its railhead terminal across the Hudson River in Communipaw, N. J. This service has been declared successful in a public statement by Daniel Willard, president of the company. This new use of buses

ESTIMATES OF BUSES ACCORDING TO USE

	As of January 1		
	1927	1926	1925
Common carrier operations:			
Intrastate motor carriers.....	31,500	30,475	31,100
Electric railways and subsidiaries.....	7,284	5,150	3,000
Steam railroads and subsidiaries.....	522	375	¹ N. C.
Interstate motor carriers.....	2,500	1,500	None
Total—common carrier	41,806	37,500	34,100
Non-common carrier operations:			
Schools (public and private).....	32,800	27,000	15,000
Sightseeing and tour companies.....	2,650	2,500	1,500
Hotel	1,050	1,000	1,000
Industrial uses	1,100	1,075	1,075
Miscellaneous, including railroad terminal companies	400	350	250
Total—non-common carrier	38,000	31,925	18,825
Total—all classes (estimated).....	79,806	69,425	52,925

¹ N. C.—Not classified.

has been carefully watched by other railroads and, in the fall, the Central Railroad of New Jersey, established a similar service from its New Jersey terminal. During the summer, the railroads increased their use of buses in tour service in the sightseeing sections of the West. On these tours, passengers transfer from transcontinental trains to buses and are taken on two, three and four-day trips to off-rail line scenic points.

Long-Distance Buses.—The motor carriers, themselves, have gone into the long-distance business more extensively during 1927 than ever before. Lines have been started between Los Angeles and Denver where connections are made with buses running to St. Louis and Chicago, Indianapolis and Detroit. A regular common carrier service linking New York and the West Coast is in immediate prospect and is announced to start early in 1928. These interstate lines are now able to operate without obtaining operating permits from the various states they traverse, inasmuch as Congress has so far failed to enact legislation regulating this type of business. Congressional action at the present session is looked for, however.

REGULATION AND LEGISLATION

Intrastate Certificates.—The Motor Bus Division of the American Automobile Association, the passenger motor carriers' national organization, appears committed to a policy of protecting the carrier who holds intrastate certificates, leaving the carriers who have initiated services subsequent to the Buck-Kuykendall decision of the U. S. Supreme Court, March 2, 1925, to prove convenience and necessity. These motor carriers who have established service subsequent to that date believe that their continued operations have already proved good faith and established their necessity and convenience. They favor a change in the so-called "grandfather" clause as written in the bill recently introduced in Congress. These carriers are not alone in their desire. Motor bus manufacturers also see plenty of difficulties in this date, even though there may

be more logic to it than an arbitrary selection of a later date.

Interstate Regulation.—How shall the class of carriers that are to come under the proposed regulation be defined, now that it is planned to eliminate the so-called class B carrier? Why should not the provision for joint state boards to hear applications be made mandatory, and what will be the method of application for operating rights when more than three states are to be traversed by an interstate carrier? In any event it seems essential that there must be uniform treatment. Short lines cannot be handled by one board and long lines by another. These are but a few of the many questions involved in drafting an interstate regulatory bill.

Some of those who have followed the fortunes of interstate regulation during the past two years declare that the Denison bill, introduced at the last session of Congress, was an improvement over the Cummins bill of the year previous. However, if the proposed bill is enacted into law while it retains the provision that the states are to act as federal agents, it will be many years before the full value of the regulation will be forthcoming and grave apprehensions are justified as to the ability of the industry to go forward. Any regulation, it is believed, should tend toward stabilization of the existing industry while facilitating future expansion.

State Legislation.—Since the inception of the industry some 14 years ago several thousand bills have been passed by state legislatures regulating it. The bus has been declared a common carrier in 45 states. Last year alone, in states where law-making bodies were in session, more than 150 bills were introduced that affected motor bus operation. As for taxes, the total paid by both city and intercity carriers approximates \$15,000,000 annually, or about 5 per cent of the gross revenue. This is also very close to 5 per cent of the capital invested in buses. While other transportation industries pay, perhaps, a slightly higher proportion of their gross as taxes, they do not

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pay nearly so large a percentage of their invested capital each year in the form of taxes.

DEVELOPMENTS

Consolidations of operating companies continued in 1927. Many profess to see in this trend an increased stability inasmuch as better business operating methods are usually adopted by the larger concerns thus created.

Philadelphia Convention.—A milestone in the industry's development was passed when the Motor Bus Division of the American Automobile Association, held its first annual convention in June in Philadelphia. Representatives of state associations in all parts of the country attended and took part in the proceedings.

Bus Design.—Another significant development of the year took place in the field of bus design. Heretofore, the bus designers have gone on their own way without reference to other transportation vehicles. In fact, these other transportation vehicles have, year by year, more nearly been made to look like buses. Engineering features brought to a high plane of development by the bus manufacturer, have been adopted by both the makers of passenger automobiles and trolley cars. A notable example of this is the worm drive rear axle. Bus designers are also now busy making their vehicles which are intended for city service, more closely to resemble street cars. In other words, the automotive street

car, capable of transporting as many passengers as the ordinary street car, is becoming a reality. In these "rubber tired street cars" the engine is supported under the floor between the wheels or at the rear to gain greater effective use of the street space occupied by the vehicle. Interesting developments in city transportation are looked for as a result of this new-type bus.

The Bus in Flood and Storm.—In the Mississippi and New England floods and the Florida and St. Louis windstorms, motor carriers did yeoman duty in continuing, under adverse conditions, their regular services and considerable relief work. In every case buses carried on with only slight interruptions. Wrecking crews quickly cleared travel lanes through the debris. Twisted and tangled overhead trolley wires stopped some trolley lines in St. Louis. The burden of handling transportation fell on the buses. In the New England flood, buses were often the only means of travel and were also used extensively to carry rail passengers around track washouts.

Forecast.—All signs point to the fact that in 1928 most spectacular developments will come in the field of city transportation and the installation of long-distance service. In addition there will be a steady expansion in all branches of operation. Adequate maintenance methods will be adopted by the carrier and better buses will be built by manufacturers. The bus industry is 14 years old.

RADIO

BY J. H. DELLINGER

CHIEF OF RADIO SECTION, BUREAU OF STANDARDS, DEPARTMENT OF COMMERCE

GENERAL

The commercialization of radio broadcasting became practically complete during 1927. Most of the broadcast programs were offered by the stations or by interests renting the use of the stations, for the advertising directly gained. The best obtainable musical talent and entertainers were presented in many of these programs,

and the advertising was usually limited to the mention of the name and business of the program sponsor or station owner.

In the non-broadcasting field there were two remarkable innovations, the commercial transatlantic telephone, and television. The former was placed in operation on a routine, everyday basis; the latter was a

brilliant experiment which provided the basis for practical development in the future.

World regulation of radio was advanced through the signing of a new Radio Convention by seventy-nine nations. This was done at the International Radio Conference in Washington, the new Convention replacing that of London in 1912. The whole spectrum of radio frequencies was re-allocated to the various types of radio service (the new frequency allocation table is given on page 414).

RADIO SCIENCE AND ENGINEERING

Wave Transmission.—Scientific investigation continued to be concentrated on the peculiarities of radio wave transmission. No way was found to eliminate the harmful effects of fading and atmospheric disturbances (static). Enough was learned about their nature and causes, however, to suggest possible ways to reduce them. Fading was demonstrated to be due to variations in the electrical conditions of the upper portions of the atmosphere, through which radio waves travel when they go long distances. The very irregularity of these variations leads to possible ways of avoiding them. It was found that the instantaneous fading is very different on different frequencies, even when close together. By using signals on several frequencies and taking their average, a more steady signal can be obtained. Similarly, by using a single frequency but combining signals from several separated receiving points, or transmitting points, it is possible that the resultant signal may be more steady. Research on these possibilities was under way, but no definite conclusions had been reached by the end of the year.

Sun Spot Correlation.—One interesting result of scientific studies of radio wave variations was the conclusion that they are intimately correlated with sunspots. The spots on the sun are produced by electromagnetic eruptions, the effects of which reach our earth and produce marked changes in the electrical conditions of the upper atmosphere, which in turn produce the fluctua-

tions we observe as radio fading. The establishment of this correlation is considered an important discovery, and was of great interest because of its effect in other sciences such as terrestrial magnetism, meteorology, and atmospheric electricity.

Atmospheric Disturbances.—Research proved that atmospheric disturbances are largely or wholly due to electrical discharges in the atmosphere usually associated with lightning. The discharges causing any atmospheric disturbances may be many hundreds of miles distant. No way has been discovered to prevent them from affecting radio reception, since they are themselves a kind of radio waves. In practice they are eliminated by using sufficient power in the transmitting station to produce signals that are strong enough so that the atmospheric disturbances are not noticed.

Piezo Oscillator.—There was extensive development of the piezo oscillator, an instrument which serves as a very constant standard of frequency and is widely used in transmitting stations. Attention was directed particularly to determining the conditions under which it preserves real constancy. Very great improvement was secured by providing means to keep the apparatus at constant temperature. The use of piezo oscillators in broadcasting stations increased markedly, largely because the stations required accurate standards in order to comply with the order of the Federal Radio Commission that frequencies be maintained to one-half kilocycle.

Vacuum Tubes.—In radio receiving apparatus, the principal development of the year was the commercial introduction of vacuum tubes heating the cathode directly from the ordinary alternating-current socket. These tubes were of two types, amplifier tubes in which thick filaments were used operating directly on the alternating-current supply, and detector tubes in which the cathode was a metal thimble surrounding the filament. Another development along similar lines was the commercial advent of the "shielded grid tube," em-

ploying a fourth electrode which greatly increases the amplification obtainable.

DEVELOPMENTS IN THE INDUSTRY

Manufacture and Sales.—Radio manufacture and sales reached greater stabilization than in past years. This resulted largely from the settlement of patent tangles and the negotiation of patent licensing agreements between the Radio Corporation of America, which controls most of the valuable patents, and the principal manufacturers. The volume of retail sales of radio goods is estimated to be about the same as in 1926, viz., about \$500,000,000, about equally divided between receiving sets and accessories.

Receiving Sets.—The trend to receiving set operation without batteries continued. Whereas in 1926 this trend was marked by wide sales of socket power outfits to replace batteries, the 1927 business was largely in tubes and sets operating directly from the alternating-current supply.

Radio Supply Dealers.—A survey of the classes of dealers retailing radio goods was made by the Department of Commerce. Fifty-eight different kinds of business were found to be handling radio supplies. Replies from 3,546 dealers indicated their principal business activities, out of a total of 7,718 replies received. Of these, stores specializing in single lines totalled 2,903, the remaining 643 carrying two or more lines. It has been estimated that there were a total of 30,000 retail dealers in radio goods.

TRANSOCEANIC COMMUNICATION

Telegraphy.—A new commercial element appeared during the year, the Mackay Radio Co., which acquired the Federal Telegraph Co. of California and began developing a trans-pacific radio service. The Radio Corporation of America added high-frequency stations, using frequencies above 4000 kilocycles (wave lengths below 75 meters), supplementing its low-frequency stations, for service to England, Germany, Argentina, Hawaii, the Philippines,

Dutch East Indies, and French Indo-China. The same company also installed beam stations for use in its business with England. In England beam stations were erected for communication with many parts of the British empire, using the same type of station as was erected for communication with Canada in 1926.

Telephony.—On January 7 the New York to London telephone service was opened. The service was extended during the year until conversation was possible between any point in the British Isles and the United States and Cuba. The ordinary wire telephone system was connected in to the powerful radio transmitting station at Rocky Point, Long Island, for transmission from the United States, while transmission in the reverse direction was from the powerful station at Rugby, England. The U. S. end of the system was conducted by the American Telephone and Telegraph Co., the British end by the British Post Office Department.

The price charged for the service was \$25 per minute, with a minimum of \$75. The year closed with a considerable doubt whether the service could be continued at this price. A report from London stated that the British costs of operation had been \$600,000 and the receipts \$250,000.

TELEVISION

On April 7 successful television was accomplished for the first time. The features of Secretary Hoover, in his office in Washington, were seen by a group of people in New York (about 250 miles distant), who at the same time heard him talk. This was done by transmitting the television impulses, a synchronizing current, and the voice current, over the telephone wire lines. On the same day similar television transmission was accomplished by radio between New York City and Whippany, N. J. (about 30 miles). About 5 kilowatts were used to transmit the television impulses and 1 kilowatt for the synchronizing impulses. Elaborate assemblages of apparatus were used at the transmitting and receiving ends, the vital elements being large photo-

electric cells to convert the transmitted light variations into electric current variations, and a neon glow lamp to convert the received current pulses into light variations.

This was an experimental demonstration, in no sense the beginning of a commercial service. It was a thoroughly successful demonstration, the features, changes of expression, smiles, etc., of the person seen being readily recognizable. The demonstration required many months of research preparation by a large organization, the American Telephone and Telegraph Co. There was no indication that the process was adaptable to commercial use before a long time.

RADIO AMATEURS

The number of amateurs engaging in radio communication with one another increased from 14,902 in 1926 to 16,926 in 1927. Their communications were nearly all by continuous-wave radio telegraphy, and at frequencies above 3500 kilocycles. Besides carrying on their regular message traffic with amateurs in other parts of the world, the amateurs made a distinguished record for service, providing an emergency communication system used at the time of the Florida hurricane and the Mississippi flood and also during various interruptions of railroad wire systems.

MARINE RADIO

Beacons.—The number of radio beacon stations operated by the Lighthouse Service to aid ships during fog increased from thirty at the end of 1926 to forty-five at the end of 1927. They are placed at strategic points to guide vessels to harbor entrances or past outlying capes. Most of the stations are of 200 watts power. These stations, utilized by the aid of direction finders aboard ships, gave increasingly important service in protecting navigation during fog. The number of American vessels carrying direction finders increased to 541, about half of those in the whole world. The number of radio beacon stations maintained by countries other than the U. S. is thirty-six.

Air Navigation.—The Department of Commerce made a beginning in adding radio to the navigation aids provided for the airways of the U. S. These aids comprehend weather information, lights for night flying, and radio for flying under conditions of low visibility. Radio is required in order to give full value to the weather information provided, as weather information is most vitally needed by the pilot while in flight. Radio is used in three ways, radio telegraph communication between airports, radio telephone communication between ground stations and airplanes in flight, and directive beacons to aid the airplane in keeping on its course.

Telephony.—The first step of the Department of Commerce in inaugurating radio service was a program of research work by the Bureau of Standards. Experimental stations including the several radio facilities were established. A public demonstration of the feasibility of telephone communication with airplanes was given on May 5 when the Director of the Bureau of Standards at his desk in Washington, using his regular desk telephone, conversed with a man in an airplane many miles away, the whole conversation being broadcasted to the radio public from station WRC with excellent quality.

Telegraphy.—The Department concluded to establish the ground stations for radio telegraphy between airports and radio telephony to aircraft at locations roughly approximating two hundred miles apart. The principal directive beacons are to be at these same points, with smaller beacons at intermediate fields. There were five directive beacons established as a beginning in this system, at Washington, D. C., New Brunswick, N. J., Bellefonte, Pa., Detroit, Mich., and Dayton, Ohio. Additional beacon stations at Cleveland, Ohio, and Chicago, Ill., were begun.

FEDERAL RADIO COMMISSION

License Control.—The radio law of 1912 was superseded by a new Act approved February 23. The Act removed the primary control of radio from the Secretary of Commerce for

one year, vesting it in a newly created Federal Radio Commission of five members. It gave the Commission power to issue and revoke licenses and to make regulations, on the basis of public "interest, convenience, or necessity." Congress failed to provide funds for the operation of the Commission, but it functioned despite this handicap through the aid of several Departments of the Government. It worked particularly in cooperation with the Department of Commerce.

Broadcasting Regulations.—The Commission had its first meeting on March 15, at which time there were 18,119 transmitting stations operating, including 733 broadcasting stations. The principal task of the Commission was the regulation of the broadcasting stations. This it attempted to encompass by careful selection of frequencies, maximum power, and times of operation. While the broadcasting service to the listener in various localities was somewhat improved by these measures, it became increasingly evident that more radical treatment was imperative to produce any marked betterment of broadcast interference conditions. Toward the end of the year the Commission announced that it proposed to clear the sixty channels between 600 and 1200 kilocycles of interference by removing from them all interfering stations, approaching the ideal of only a single station operating at any one time on one channel. The Commission also determined to deny licenses to a large number of stations, with a view to reducing the number early in 1928 to around 400. Recommendations along both of these lines had been made to the Commission earlier in the year by the American Engineering Council after a careful study of the broadcasting situation. The number of broadcasting stations at the end of the year was 686 (15 more than at the end of 1926).

DEVELOPMENTS IN BROADCASTING

The year was marked by great extension of network (or chain) broadcasting. The National Broadcasting Company increased its operations

from 17 to 87 stations for interconnection. These covered the whole country. Some other, smaller networks were organized, the principal one being that sponsored by the Columbia Phonograph Co., with 16 stations. The National Broadcasting Co. broadcast the ceremonies of Lindbergh's homecoming on June 12 from 50 stations. On this occasion for the first time music was transmitted for broadcasting from the east coast to the west coast. On Sept. 21 the Radio Industries banquet was broadcast from 87 stations. On such occasions something over 20,000 miles of wire line connections between the stations were used. The National Broadcasting Co. spent about \$8,000,000 during the year in presenting radio programs. The rates it charged a customer, i.e., one who rented its facilities in order to sponsor programs and thus secure the advertising of his name, were from \$120 to \$600 per hour per station. Through the network system, radio advertising advanced to a position of importance, competing seriously with the magazines and newspapers.

An interesting change in program methods was the use at some stations of the new high-quality phonograph records. Records had been barred in previous years, but those produced by recent processes have such fidelity to the original that they were acceptable elements of radio programs. Effective August 21, the Federal Radio Commission ordered that all broadcasts of music performed through the agency of mechanical reproductions be clearly announced as such.

INTERNATIONAL RADIO CONFERENCE

Upon the invitation of the State Department of the United States, representatives of 79 governments met at Washington October 4, 1927, to revise the 1912 International Radiotelegraph Conference of London. Secretary Hoover was chairman of the Conference. The final session was held November 25, at which time the delegations of all the governments represented signed the Convention and General Regulations without reservations. The treaty was submitted by the President on December

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12 for ratification by the Senate. The Convention and General Regulations were to go into effect January 1, 1929.

The treaty standardized the use of radio throughout the world. The radio frequency spectrum from 10 to 60,000 kilocycles per second was allocated to the following services: mobile, fixed, broadcasting, special (including radio beacons, radio compass, and amateurs). All nations agreed to use the same bands of frequencies for corresponding services, eliminating thereby interference between different services. The standard of frequency agreed to was the standard of time, the mean solar second.

The use of damped waves was forbidden with certain minor exceptions. The establishment of a list of 3-letter signals and abbreviations made possible the carrying on of essential communications between any two sta-

tions without respect to the language used by the operators. The procedure for operation of mobile stations was so standardized that it is possible to carry on such communication effectively. The use of radio for distress purposes was recognized as of foremost importance and the distress frequency (500 kilocycles) was given adequate protection. A standard method for the operation of automatic alarm signals was adopted; this insured that in the development of such devices they would all be made to respond to the same signal.

An International Technical Consulting Committee was created to study technical questions submitted to it. The reports of the Committee will serve to keep all nations informed as to standards of procedure, technical developments, etc.

The frequency allocation adopted is as follows:

Frequencies in Kilocycles per Second (kc/s)		Approximate Wave Length in Meters		Services
10-	100	30,000	-3,000	Fixed services.
100-	110	3,000	-2,725	Fixed services and mobile services.
110-	125	2,725	-2,400	Mobile services.
125-	150 ¹	2,400	-2,000 ¹	Maritime mobile services open to public correspondence exclusively.
150-	160	2,000	-1,875	Mobile services. (a) Broadcasting. (b) Fixed services. (c) Mobile services.
				The conditions for use of this band are subject to the following regional arrangements:
160-	194	1,875	-1,550	All regions where broadcasting stations now exist working on frequencies below 300 kc/s (above 1000m). (Broadcasting.)
				Other regions { Fixed services. Mobile services.
				Regional arrangements will respect the rights of other regions in this band.
				(a) Mobile services. (b) Fixed service. (c) Broadcasting.
				The conditions for use of this band are subject to the following regional arrangements:
194-	285	1,550	-1,050	{ (a) Air mobile service exclusively. (b) Air fixed services exclusively. (c) Within the band 250-285 kc/s (1200-105m). Fixed service not open to public correspondence. (d) Broadcasting within the band 194-224 (1550-1340m).
				Europe { (a) Mobile services except commercial ship stations. (b) Fixed air services exclusively. (c) Fixed services not open to public correspondence.
285-	315	1,050	- 950	Other regions { Radio beacons.

¹ The wave of 143 kc/s (2,100m) is the calling wave for mobile stations using long continuous waves.

RADIO

Frequencies in Kilocycles per Second (kc/s)	Approximate Wave Length in Meters	Services
315- 350 ²	950 - 850 ²	Air mobile services exclusively.
350- 360	850 - 830	Mobile services not open to public correspondence.
360- 390	830 - 770	(a) Radio compass service. (b) Mobile services, on condition that they do not interfere with radio compass service.
390- 460	770 - 650	Mobile services.
460- 485	650 - 620	Mobile services (except damped waves and radiotelephony).
485- 515 ³	620 - 580 ³	Mobile services (distress, call, etc.).
515- 550	580 - 545	Mobile services not open to public correspondence (except damped waves and radiotelephony).
550- 1,300 ⁴	545 - 230 ⁴	Broadcasting.
1,300- 1,500	230 - 200	(a) Broadcasting. (b) Maritime mobile services, waves of 1365 kc/s (220m) exclusively.
1,500- 1,715	200 - 175	Mobile services.
1,715- 2,000	175 - 150	{ Mobile services. Fixed services. Amateurs.
2,000- 2,250	150 - 133	Mobile services and fixed services.
2,250- 2,750	133 - 109	Mobile services.
2,750- 2,850	109 - 105	Fixed services.
2,850- 3,500	105 - 85	Mobile services and fixed services.
3,500- 4,000	85 - 75	{ Mobile services. Fixed services. Amateurs.
4,000- 5,500	75 - 54	Mobile services and fixed services.
5,500- 5,700	54 - 52.7	Mobile services.
5,700- 6,000	52.7 - 50	Fixed services.
6,000- 6,150	50 - 48.8	Broadcasting.
6,150- 6,675	48.8 - 45	Mobile services.
6,675- 7,000	45 - 42.8	Fixed services.
7,000- 7,300	42.8 - 41	Amateurs.
7,300- 8,200	41 - 36.6	Fixed services.
8,200- 8,550	36.6 - 35.1	Mobile services.
8,550- 8,900	35.1 - 33.7	Mobile services and fixed services.
8,900- 9,500	33.7 - 31.6	Fixed services.
9,500- 9,600	31.6 - 31.2	Broadcasting.
9,600-11,000	31.2 - 27.3	Fixed services.
11,000-11,400	27.3 - 26.3	Mobile services.
11,400-11,700	26.3 - 25.6	Fixed services.
11,700-11,900	25.6 - 25.2	Broadcasting.
11,900-12,300	25.2 - 24.4	Fixed services.
12,300-12,825	24.4 - 23.4	Mobile services.
12,825-13,350	23.4 - 22.4	Mobile services and fixed services.
13,350-14,000	22.4 - 21.4	Fixed services.
14,000-14,400	21.4 - 20.8	Amateurs.
14,400-15,100	20.8 - 19.85	Fixed services.
15,100-15,350	19.85- 19.55	Broadcasting.
15,350-16,400	19.55- 18.3	Fixed services.
16,400-17,100	18.3 - 17.5	Mobile services.
17,100-17,750	17.5 - 16.9	Mobile services and fixed services.
17,750-17,800	16.9 - 16.85	Broadcasting.
17,800-21,450	16.85- 14	Fixed services.
21,450-21,550	14 - 13.9	Broadcasting.
21,550-22,300	13.9 - 13.45	Mobile services.
22,300-23,000	13.45- 13.1	Mobile services and fixed services.
23,000-28,000	13.1 - 10.7	Not reserved.
28,000-30,000	10.7 - 10	Amateurs and experimental.
30,000-56,000	10 - 5.35	Not reserved.
56,000-60,000	5.35- 5	Amateurs and experimental.
Above 60,000	Below 5	Not reserved.

² The wave of 333 kc/s (900m) is the international calling wave for air services.

³ The wave of 500 kc/s (600m) is the international calling and distress wave. It may be used for other purposes on condition that it will not interfere with call signals and distress signals.

⁴ Mobile services may use the band 550 to 1,300 kc/s (545-230m) on condition that this will not cause interference with the services of a country which uses this band exclusively for broadcasting.

NOTE.—It is recognized that short waves (frequencies from 6,000 to 23,000 kc/s approximately—wave lengths from 50 to 13m approximately) are very efficient for long distance communications. It is recommended that as a general rule this band of waves be reserved for this purpose, in services between fixed points.

THE AIRSHIP AND AIRPLANE TECHNIQUE

BY ERNEST L. JONES

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GENERAL PROGRESS

As the first quarter century of mechanical flight draws to a close we see a progress greater than that made by the steam railroad in its first similar period. The past year has seen a tremendous activity and growth in every phase of civil aviation. In civil aerostation there is still no activity though transcontinental airship routes have been promised for several years.

The public has fully awakened by the flights of Lindbergh and others, and by progress abroad, to the possibilities of air locomotion, and its needs. Capital is being readily invested in air enterprises. The Department of Commerce is fully launched in a tremendous program of lighted airways. Contract air mail, passenger and express lines are regularly operating in an ever-increasing number of sections, airplanes are being largely purchased by private owners and business firms in the conduct of their own affairs in addition to purchases for air taxi, touring, photography and similar other air services.

Government and civil agencies are cooperating in an extensive program of technical development of aircraft, accessories, and aids to air navigation and rapid progress is being made in the reduction of risk and cost.

AIRPLANE TYPES

Airplane types trend toward standardization for particular services. The biplane continues the favored for military purposes and in the smaller commercial models. For passenger transport and touring, monoplanes are preferred, whether single- or multi-engined. The rediscovery of our waterways has returned the seaplane and encouraged the amphibian. Metal floats or hulls have eliminated water absorption.

Biplane.—The great bulk of civil production is in the light 3-seater 90/100 h. p. biplane, sold to private owners, flight students and air taxi,

sightseeing, photographs and general air service operators as apart from air transport.

Monoplane.—For transport and more extensive sightseeing or touring and for use of industrial executives, the standard is a cabin monoplane of 200 horsepower, considerable attention being given to interior finish, comfort and elimination of noise. Muffled exhaust is having a belated introduction. In the multi-engine class the cabin has practically all the personal conveniences of rail or water transport and attention is being given to sleeping accommodations for long distance night service.

Speed.—Airplane speed has not yet reached its limit, apparently, as the winner of the international seaplane race made 281.655 miles an hour. The average commercial speed, however, has settled between 90 and 120 miles and commercial demands will probably not warrant sacrifices in other directions for the sake of additional time saving.

Carrying Capacity.—Constant improvement is made in performance. From approximately 2.02 lbs. per square foot of wing loading on the early Wright we have transoceanic planes carrying 20 lbs. to the foot, while the vehicle-weight per horsepower has been reduced from the 38 lbs. of the Wright to 24.4. The useful load has advanced from 17.6 to 40-45 per cent and the speed from 40 to 120 miles per hour.

AERODYNAMICS

Improvements.—In America the outstanding event of the year was the Guggenheim competition for improvement of the aerodynamic safety characteristics of airplanes, which attracted international competition. Abroad various devices have been successfully demonstrated to give controllability to a plane which has, for any reason, assumed an attitude of instability. Other improvements in the differential aileron control, bal-

anced ailerons, adjustable stabilizers and the like are noted.

MACHINE PROGRESS

Materials.—Practically all American planes are now built with metal bodies and at least two all-metal (duralumin) planes are on the market and in operation in the hands of owners.

Accessories.—Hydraulic and mechanical brakes are generally being applied on both military and civil planes of all types save "light planes," in combination with shock absorbers. Commercial radio sets, for both transmission and reception, are on the market for use with the Government's radiobeacons and otherwise.

Instrumental Research.—Research work continues on the further development of present and new airplane instruments. During the year the earth inductor compass has proven its capabilities. This operates on the principle of an armature rotating in the magnetic field of the earth. With any change in the position of rotation of this armature with respect to the direction of the earth's line of force, there is a corresponding change in the voltage generated. If a sensitive galvanometer is so arranged as to read zero for any particular position of the armature relative to these lines of force, it will show different readings corresponding to the amount of change in position. The calibration of the instrument, then, can be so arranged that it will read the different points of the compass electrically as the position of the vehicle carrying the rotating armature is changed.

Among other flight instruments are greatly improved types of inclinometers, air speed indicators, bank and turn indicators, drift indicators, flight indicators, etc. The arrangement on instrument boards has been condensed and new systems combine the readings of several instruments in a single vertical panel comprising a number of scales on one vertical dial.

ENGINE DEVELOPMENTS

Air-Cooled Engines.—The air-cooled type of engine holds predomi-

nance though two new water-cooled engines of 600 and 1,300 horsepower have been developed during the year. Two new 525 horsepower air-cooled engines have been produced, primarily for military purposes, but future development of passenger planes may provide a market for the higher powers, the 200-225 horsepower air-cooled engine being the standard now in general operations involving passengers, mail and goods. A number of both types of engines are used in a position inverted from normal. To replace the 90-100 horsepower war surplus engine which has made possible the low priced two- and three-place planes now in the majority, new designs are coming upon the market, at, of course, higher prices. In the main these engines are air-cooled.

Oil Engines.—Progress is rapid with oil engines. This type has reached a weight ratio which will permit its use in airships, and there is some prospect that it may even be available for use in aviation.

Supercharger development continues and it is now ready for practical use. The increase in ceiling climb and speed made possible thereby is expected to encourage the use of this device in commercial as well as military flying.

Radiators and Propellers.—The proper placing of radiators for minimum head resistance and efficient cooling in the various types of planes continues to receive attention, but the cartridge type of radiator has become standard. The expense of the wing radiator does not permit its use in commercial craft. There is continual development of manufacturing technique in propellers and a strong trend toward adjustable blades.

FLIGHT FACILITIES

Hazards.—That of fire has been largely reduced in both military and civil flying through crash-proof tanks, gravity feed, improved exhaust manifolds, fire walls and generally better fittings. In all flying the crash percentage grows smaller and safety in civil flight on regular transport routes is recognized by the life insurance companies which have eliminated exception clauses in policies. All

phases of insurance are now written to cover air risks. In military flying and in certain mail services in mountainous areas parachutes are standard equipment. The pilot or passenger wearing this device merely jumps clear of the plane and after a few seconds pulls a ring in the harness which releases the parachute itself.

Air Marking.—More than 2,000 towns and cities of the United States have been "air marked" to date. Railroads have been urged to paint the names of stations on roofs, and one company has definitely undertaken a program.

GOVERNMENTAL AIR AGENCIES

The United States Government air activities are mainly divided among five separate agencies carrying on important aeronautical work as follows: United States Army Air Corps, the Navy Bureau of Aeronautics (in which is incorporated the Marine Corps), the Air Mail Service of the Post Office Department, the National Advisory Committee for Aeronautics and the Department of Commerce.

U. S. Army Air Corps.—The Army Air Corps is a separate combatant branch of the Army.

The five-year program passed by the Sixty-ninth Congress authorized an Assistant Secretary of War for Aeronautics and a strength of 1,514 officers and 16,000 enlisted men including 2,500 flying cadets. The program anticipates a permanent material strength of 1,800 useful airplanes, airships and balloons, with an annual replacement not exceeding 400. The total increase in personnel and equipment to be distributed over the period. The same Bill authorized an Air Section in the General Staff.

For the instruction of its personnel the Air Corps maintains a technical school, and a primary and an advanced flying school, a tactical school, a school of air medicine, a balloon and airship school, an engineering school and an inspectors' school under the direct supervision of the Chief of Air Corps, while a number of fields located at other places throughout the United States occupied by tactical units, are under the immediate command of Corps

Area or Department Commanders of the Army.

The engineering division, which operates an elaborate plant at Dayton, Ohio, has continued its development work. While other types of military planes have become standardized new designs of attack and bombing planes are being built. Other experimental work includes aircraft armament, radiobeacon and other radio, skis, brakes and disc wheels, shock absorbers and cameras.

Mapping.—Forty-three of its program of fifty-two airway maps have been completed and the balance are in progress. Future work of this character is being done by the Department of Commerce. During the year both the Army and the Navy photographed thousands of square miles for mapping purposes.

Contests and Exhibitions.—The Air Corps participated in contests and exhibitions, made the first non-stop flight to Hawaii, sent a flying mission for 22,065 miles around South America and aided in flood relief. The annual cooperation was given the Forest Service in fire patrol.

U. S. Navy Aeronautics.—Naval aeronautics with another new Assistant Secretary of Navy for Aeronautics has passed its first year under the five-year program which authorized 1,614 airplanes to be purchased during the five years, a useful strength of 1,000 to be maintained after 1932. The Sixty-ninth Congress also authorized two rigid airships of six million cubic feet and one all-metal airship of about 200,000 cubic feet, now in process of construction. (See NAVAL AERONAUTICS.)

The National Advisory Committee for Aeronautics, composed of twelve members, appointed by the President, from Governmental departments and civil life, is charged with the duty of the supervision and direction of the scientific study of the problems of flight, with a view to their practical solution and the determination of problems worthy of experimental attention and the presentation of the results of their experimental and scientific work for the advancement and practical application to the development of aeronautics. For the accom-

plishment of these ends, the N. A. C. A. has a well-equipped research laboratory located at Langley Field, Hampton, Va., one of the stations of the Army Air Service. The N. A. C. A. functions through an executive committee and standing technical committees, which assure coordination with other government air agencies and the public.

While accomplishing work in its own laboratory on the more fundamental principles of aeronautics, the Committee also functions in the direction and allocation of work on particular problems by various other governmental and private institutions. It not only makes available the results of its own experimental and research work but collects and makes available aeronautical data and information secured from existing agencies throughout the world.

The Post Office Department inaugurated the first air mail service in the United States and, until September 1, 1927, operated the transcontinental air mail. Both sections of this route were turned over to private enterprise at the later date and all air mail routes now in operation are conducted by private enterprise under contract with the Post Office Department.

Department of Commerce.—Under the Air Commerce Act of May 20, 1926, the Department of Commerce is charged generally with the encouragement and regulation of aircraft in commerce under an Assistant Secretary of Commerce for Aeronautics.

Briefly, the Secretary will generally foster air commerce through encouragement of airports, airways and other air navigation facilities; rate and register civil and public U. S. aircraft; examine and rate airmen and facilities; establish air traffic rules, establish and operate civil airways and navigation facilities except airports; chart and publish maps thereof; and

Recommend meteorological service to the Secretary of Agriculture; study possibilities of development of air commerce, industry and trade; collect and disseminate information; investigate, record and publish causes of accidents; issue, suspend or revoke

registration, aircraft or airman certificates.

On July 1, 1927, the Department took over, on agreement with the Postmaster General, the airways, emergency fields and other air navigation facilities then under jurisdiction of the Post Office (save airports and terminals which were transferred to the municipalities concerned). The Act also provides that air navigation facilities owned or operated by the United States may be made available for public use. Government establishments owning or operating air navigation facilities may provide fuel, oil, equipment, supplies, service, shelter and other assistance in emergency at fair market value under rules of such establishment. The Agriculture, Treasury and Labor Departments were also charged with certain duties under the Act.

GOVERNMENT AERONAUTICS

The President.—From the inception of flight the Presidents have lent encouragement. President Lincoln, it will be remembered, established America's first air service (balloons). Under the Air Commerce Act of 1926 the President is empowered to "set apart and protect air space reservations for defense, public safety, or other governmental purposes."

Department of State.—Aeronautic reports of the Diplomatic and Consular Services are made available to the industry.

Department of Commerce.—Aeronautics Branch was organized in the office of the Secretary under the Air Commerce Act of 1926, specifically charged with the "encouragement and regulation of the use of aircraft in commerce."

The Bureau of Foreign and Domestic Commerce maintains commercial attachés and trade commissioners in all important countries. Their reports are made available to the public; opportunities for the sale of American aeronautical equipment abroad are brought to the attention of American firms.

The Bureau of Standards has, from the beginning of flying, been actively engaged in the development of the technical side of aeronautics from

XIII. MANUFACTURES AND TRANSPORTATION

almost every angle, and is in contact with flight through the verification of instruments used in nearly every new record established by aircraft in this country and in the researches conducted for the various Departments. It has been given added duties in the development of the radio-beacon and other radio, lighting and other aids to air navigation for the Department of Commerce.

The Patent Office obviously has to do with aeronautic patents and their number runs into the thousands.

The Bureau of Mines uses the airplane frequently to carry rescuers and machinery to the scene of mine disasters and for surveys and maps. To the aeronautic world it is best known for its work in helium research. Its plant at Fort Worth produces the helium required by the military air services.

The Bureau of Fisheries, in its conservation work and in the development of agriculture, has studied the airplane in connection with the development and control of commercial fisheries and has actually demonstrated the use of the airplane in this work.

The Bureau of the Census is concerned with various statistics. In its biennial census of manufacturers it includes aircraft, engines and accessories.

The Bureau of Lighthouses is now, under the Air Commerce Act, directly engaged in the installation and maintenance of light beacons and intermediate fields and other aids to air navigation such as the radiobeacon, radiotelegraph and radiotelephone along the airways.

The Coast and Geodetic Survey is now also charged with air mapping. The Survey has used aerial photographs in its normal work since 1920.

Department of Labor.—The Secretary of Labor, under the Air Commerce Act, designates ports of entry for air immigrant aliens, details men and applies the general immigration laws to air travelers.

Department of Agriculture.—The airplane and the airship have already been employed by this Department to a greater extent than in any other

purely civil branch of the Government, except the Post Office.

The Weather Bureau is now specifically charged with furnishing weather information to civil airways. New upper air stations have been established at airports or in their vicinities and a system of distribution was put into effect on the airways in the latter part of 1926.

The Forest Service has used airplanes for forest fire patrol annually since 1919.

The Forest Products Laboratory.—In the development of aircraft structures the laboratory has been of inestimable value to the airplane industry.

The Bureau of Entomology has conducted extensive war by air against wheat rust, the boll weevil, locusts and other pests.

The Bureau of Agricultural Economics has done crop reporting by airplane observation and aerial photography in experiments which successfully demonstrated the airplane's efficacy.

The Bureau of Public Roads uses the airplane in the making of mosaics of highways and this application of the airplane will increase in volume.

The Department of the Interior is charged with the supervision of the General Land Office, Bureau of Reclamation, Geological Survey, Office of Indian Affairs, Pensions, Bureau of Education, the National Park Service and the Government Railroad in Alaska.

The Geological Survey has extensively used airplanes in the production of new maps and the correction of old.

The Treasury Department, under the Air Commerce Act, designates ports of entry for aircraft, details customs men, and applies the laws relating to customs and public health. The Internal Revenue uses airplanes in the attempt to enforce prohibition.

The Public Health Service has to do with quarantine regulations, the water supply on aircraft and other common carriers. Air immigrants must undergo medical examination by this service.

The Coast Guard, which renders assistance to vessels or aircraft in

distress and gives medical aid to deep-sea fisheries, also protects custom revenues, enforces laws and regulations governing anchorage of vessels in navigable waters, and quarantines, protects game and other fisheries, etc. A Coast Guard air service has been in existence for the past five years.

War Department. — The General Staff prepares war plans and considers how, when and where the Air Corps of the Army will be employed with the other services. From the first use of balloons in American warfare in 1861, balloons and airplanes have been used with the artillery for fire control. Infantry has been familiar with aircraft for the same period, and aircraft are used in connection with their operations.

The Chemical Warfare Service, a comparatively new arm, is concerned with the development of toxic and other gases, smokes and incendiary material used by aircraft as well as otherwise.

Army Engineers have employed aircraft to a greater extent for its work on rivers and harbors, establishment of harbor lines, anchorage grounds, power projects, in surveying and mapping.

The Ordnance Bureau is concerned with the armament of aircraft but does not operate aircraft for its own purposes.

The Chief of the Signal Corps has charge of the development of all signal equipment, meteorological and other instruments used in connection with military aircraft in peace and war but this service no longer operates aircraft.

Navy Department. — (See NAVAL AERONAUTICS.)

Smithsonian Institution, among other things, has the custody of aeronautic material representing the progress of the art. For more than threescore years it has been active in aeronautics. It encouraged three early attempts to cross the Atlantic by air and its officers were largely responsible for the use of the balloons in the Civil War and for the experiments of Langley.

The Board of Surveys and Maps correlates and coordinates the map

and chart making and using agencies of the Government and provides contact with states, counties and cities and the public. The board is composed of representatives from all governmental agencies interested in maps.

The Federal Power Commission is interested in all matters pertaining to the utilization of natural resources for the making and transmitting of power. The airplane is used in many of its surveys.

The Aeronautical Board appointed by the Secretary of War and the Secretary of the Navy is concerned solely with aeronautics, and is designed to prevent duplication and to secure coordination between the Army and Navy air services.

Advisory Air Coordination Committee, comprising the three Assistant Secretaries for Air of Commerce, Navy and War, recommends to the Secretaries of War, Navy, and Commerce general policies relating to the coordination of the air activities of the Government.

Patents and Design Board.—The Army Air Corps Bill of 1926 created this Board consisting of the three Assistant Secretaries for Air. Any individual, firm or corporation may submit a design for aircraft, aircraft parts or aeronautical accessories, whether patented or unpatentable, to the Board. After recommendation from the National Advisory Committee for Aeronautics, it can determine whether the use of such designs by the Government is desirable or necessary, and fix worth to be offered the owner for rights.

Committee on Aircraft and Fog Flying Research.—To further research, particularly in fog flying, an unofficial committee was organized by the Daniel Guggenheim Fund for the Promotion of Aeronautics, comprising also representatives of the Department of Commerce, Bureau of Standards, Bureau of Aeronautics of the Navy, the Post Office and the Army Air Corps. Other subjects are also considered, such as the radiobeacon, capacity altimeter, field localizer, acoustic altimeter, lighting and other.

MERCHANT MARINE

BY PETER BAIN

EDITOR, *Bain's Marine Annual* AND *Shipping Illustrated*

WORLD TRADE CONDITIONS

Idle Tonnage.—While 1927 registered a steady improvement in world trade conditions, it does not appear to have to any substantial degree lessened the number and total tonnage of vessels previously listed by the various nationals as "idle" or "laid-up" and, as a consequence, the United States, with its huge wartime and immediately postwar built fleet, made little headway in lightening its national burden, although here and there, relative to it, advantage was taken to inaugurate some very worthwhile maintenance economies. In a word, our 1926 idle tonnage was conspicuously idle during 1927, no abnormal situation having developed such as the British coal strike of the former year to press into service any considerable tonnage for even a few months. Again, the Ford Motor Company did not repeat its 1926 order for 199 ships for scrapping purposes. Such advantage, therefore, as American shipping was able to take of the improved world trade conditions belonged entirely to vessels established and being operated in regular services, and in which these more than held their own.

As a matter of record, the active United States Government-owned merchant fleet, which with a very few exceptions constitutes our world trade representation, again made not only a deep cut in its operating losses, but in not a few services turned former operating losses into impressive profits. It must be admitted however, that as we get further away from the wartime period the continuously idle portion of our Government-owned fleet becomes a lessened prospect for ultimate service—competitive and remunerative. Expressed otherwise, what in 1919-1920 appeared to be a national asset, an aggregation of ship tonnage second only to Great Britain, and a good second, has since developed into a liability and, having regard to the

progress since then in naval architecture and marine engineering as expressed in the almost feverish new construction activities of practically every foreign maritime nation, dare we say, again having in mind the elapse of almost a decade, that the liability seems likely to "compound" itself if it has not already begun. In other words, foreign nations with their new and modern ships—oilburning-steam propelled, and internal combustion engine propelled, are scrapping our laid-up fleet willy-nilly.

NEW CONSTRUCTION

Building Competition.—Bearing further on this feature and in more detail, it is worthy of note that, from and including the year 1921 up to the fiscal year ended June 30th, 1927, new construction of vessels of 2000 gross tons or over by the principal maritime countries of the world shows that, for every ship so rated and built in the United States, Great Britain has built 41, Germany 12, Italy 5 and France and Japan probably 4 each. Other things then being equal, the fast and up-to-date ship gets the cream of the freight offering. We are thus being outclassed not only in tonnage but also in the character of service we are able to render the shipper, and more and more are we likely to get the less desirable class of cargo—commodities invariably handled by slow ships and therefore at low freight rates.

Commenting on the foregoing situation in the course of a circular issued on behalf of a group of American business men who have incorporated the Transoceanic Corporation of the United States, Lawrence B. Wilder, chairman of the shipbuilding division of the American Brown, Boveri Electric Corporation, says, "If any American group has funds and courage to acquire our obsolete 'bottoms' in face of such competition, they are to be praised, not blamed."

SHIPPING BOARD ACTIVITIES

Government Fleet.—It must not be inferred, however, that the Shipping Board has been and still is standing idly by in the matter of trying to "break" into service and preserve as an asset—either for Government or privately owned operation—at least a reasonable portion of the inactive fleet. In the circular referred to, Mr. Wilder sets the record straight when he says: "I believe the members of the Shipping Board should be praised, not blamed, for their many laudable accomplishments." As is perhaps not too well known, the primary function of the United States Shipping Board is the establishment and maintenance of an American Merchant Marine, based on various Acts of Congress. A secondary function closely related to the primary one is the operation and liquidation of the Government fleet of merchantmen acquired as a result of the war. It was, therefore, the unmistakable intent of Congress as clearly expressed in the Merchant Marine Act, that the Government fleet was to be so utilized that ultimately it would become part of the privately-owned American Merchant Marine, and one has no hesitation in saying that the Shipping Board has kept constantly in view the important rôle that Government-owned merchant vessels must play in the upbuilding of the commercial shipping of this nation.

When the armistice was signed, the Shipping Board controlled 1,196 vessels in active service, not counting vessels under construction. This number was subsequently augmented by the return of vessels from the Army and Navy, and by other acquisitions. The Shipping Board has owned and controlled a grand total of 2,536 vessels of all types, aggregating 14,706,217 dead-weight tons. Needless to say, the handling and disposition of this enormous fleet has proved a complicated problem.

Trade Routes.—As the result of the establishment of trade routes by the Board, steamships flying the American flag have again appeared in the principal ports of the world for the first time in 75 years, and not a single one of them in competition

with privately owned American flag vessels. At the end of the fiscal year June 30th, 1927, the Shipping Board still possessed 823 ships, 307 in active operation and 516 in the laid-up fleet. The established trade routes and the lines operating them as well as the individual ships of the inactive fleet are held out to private capital for purchase under the most favorable terms, and the Shipping Board continues to operate upon strategic trade routes only until such time as private capital is disposed to take them over.

Shipping Policy.—The statement is frequently made that the United States as one of the greatest ship-owners in the world has no shipping policy. The position is otherwise and very much so, for the Merchant Marine Act lays down a policy that is concrete and unmistakable, and no nation has a more definite one. The Shipping Board is doing its best to carry out that policy for, besides using the Government fleet in the establishment of essential trade routes, since 1921 it has sold to American citizens 1,134 ships, representing 4,993,346 tons, for \$84,411,023.39, including nine established ship-line services disposed of upon the basis of guaranteed operation for a fixed number of years. A very creditable record, when one considers the many knotty problems to be solved, aside from the reconciliation of conflicting interests and the severe competition engendered as a result of the ragged condition of world trade in recent years. The Merchant Marine Act of 1920, although looking unmistakably to ultimate private ownership of the Government fleet, does not direct the Shipping Board to sell ships recklessly as to price, and in the case of lines and services particularly, only when predicated upon the belief that such sales, with a guarantee period, would make for permanency of service. Without some such feeling of security, the Shipping Board would not be justified in selling, but rather would see to it that Government operation was continued until healthier economic conditions made private operation possible.

PRIVATE OWNERSHIP ACTIVITIES

Private Versus Government Control.—Public opinion, indirectly and directly interested, still indicates its preference for private ownership and operation, as against Government ownership and operation of an American Merchant Marine, all as provided for in the Jones Act of 1920. There have been, however, unmistakable signs of a reaction, due to a growingly evident reluctance of private ownership to purchase individual ships, ship lines, and ship services, now Government controlled and operated.

Jones Bill.—Already expressive of the reaction is a projected further Jones Bill which seeks among other things to make permanent the Government operation of an American merchant marine. This measure, despite the private ownership views of President Coolidge, has been approved by the Senate Committee on Commerce, but hardly seems likely to get much further. It has served one useful purpose; private ownership has become awake to its peril and, judging from its renewed activities, may be counted upon to "keep the field" and win out ultimately.

Other Legislation.—To this end, recommendation has been made by a full and representative conference of American shipowners and operators which assembled in Washington on invitation of the United States Shipping Board that bills standing in the names of Senators Wood and Cope land, providing for the maintenance of a privately owned American Merchant Marine through Government aid, be enacted into law. The bills provide for the awarding of mail contracts to private merchant vessels on a more liberal basis; the establishment of a merchant marine as a naval auxiliary in line with naval specifications, and permission for private shipping interests to borrow money from the Government at low interest rates. Other provisions look toward the further development of the merchant marine under private enterprise. Recommendations for new construction of merchant ships are also made.

Perhaps what 1927 and years im-

mediately previous to it failed to accomplish 1928 will achieve. Under the trade conditions that have generally prevailed since the Armistice, coupled with the knowledge that the Government-owned ships were for the most part outclassed as regards competition with the newer and more modern ships of other maritime nations, and therefore unattractive purchases, private shipowners have been inclined to look askance at world-port services, preferring to turn their attention to the protected coastal and intercoastal trades, notwithstanding that these already were being served probably to as full an extent as the traffic would bear.

Intercoastal Trade.—The decision of the International Mercantile Marine Co. to dispose of its interest in the White Star Line—transatlantic service—to British owners, and concentrate intensively, by building three new ships—the largest and most powerful yet constructed in an American yard—on its already established Panama-Pacific service, constitutes perhaps, the most outstanding example of American private ownership's attitude to world trade, with conditions as they are. The intercoastal trade, however, has not been without its troubles in 1927 and for a number of previous years.

Bearing on intercoastal trade competition, a new entry in August, 1927, was that of the Bethlehem Steel Corporation which bought the fleet of the Garland Steamship Line. Six steamers operating under the name of the Calmar Line constitute the fleet. Strictly private ownership in the intercoastal cargo trade is therefore associated with three industrial carrier lines, and not a little heart-burning has ensued in consequence. The intercoastal trade faces a different competitive condition than any other deep sea trade for, besides competing among themselves, the Panama Canal lines have to meet rail competition. Obviously the water level of rates is fixed by the rail level and no business can be secured except at lower than rail rates. In most off-shore trades, rates are quoted weight or measurement on an any-quantity basis. In this trade it is the nat-

ural thing in the face of rail competition for water lines to follow the carload and less-than-carload principle. Of the new vessels, passenger or freight, or combination passenger and freight which entered service in our coastal or intercoastal trades during 1927, the big Matson liner *Malolo* was the most outstanding. Although not actually in service at the year end, the big new Panama-Pacific liner *California*, the first of a fleet of three similar ships, may rightfully be included in the year's activities.

BILLS OF LADING LEGISLATION

Proposed Convention.—Adoption by the United States of a uniform ocean bill of lading based primarily on the Hague Rules of 1921 is still pending. Originated at an international conference at The Hague, since developed at subsequent international conferences and signed by the American Ambassador in Belgium for adoption as an international agreement, the proposed convention was sent to the United States Senate in February, 1927, for action. With its very direct bearing on American Merchant Marine affairs, such a document called for very careful consideration.

Among more or less fundamental questions that have arisen, aside from that of relationship to the development of an American Merchant Marine, is that of freedom of contract between American citizens when such contracts do not in any way involve international relations and which might be impaired through the instrumentality of an international agreement such as the convention or treaty demands. Again, in view of enactment into law having already been made by the Parliament of Great Britain, opinions have been expressed that, following enactment by the United States, Great Britain would enjoy greater freedom of action than we would because of the different systems of the two national governments. On the other hand, pleas from many quarters have been made to have enactment by the United States put through at the earliest possible moment, the latest and perhaps most

influential and vitally interested coming from a representative meeting of New York City bankers, trust companies, and private banking houses, at which resolutions were adopted urging speedy ratification.

TRANSATLANTIC PASSAGE

Proposed Four-Day Trips.—On the premise that speed lags at sea, particularly as regards North Atlantic passenger, mail and express freight services, private ownership under the title of the Transoceanic Corporation of the United States has been incorporated to build and operate a fleet of vessels, commodious and luxurious, of 31 to 33 knots speed, the objective being a four-day passage between one or more United States Atlantic ports and European channel ports with ultimate expansion to a daily sailing. The design of the vessels, their powering, and the economic and business conditions under which they must operate have been carefully examined and tested from all angles by three committees of disinterested experts and engineers. Executive officers of the American Brown Boveri Electrical Corporation are the moving spirits in the enterprise which is understood to have the support and confidence of prominent American business men.

The history of any form of transportation shows that the public demands and will support a fast and frequent service. With a foreign trade approximating \$10,000,000,000, an annual ocean freight bill of \$725,000,000, and investments abroad exceeding \$14,000,000,000, the American people need and will patronize a fast trans-Atlantic service.

Airplane Cooperation.—Because airplanes are a natural part of ocean transportation, air service is included as an integral unit of the four-day ocean project. Airplanes cannot make contact with trains or moving objects on earth, but they can and do land on moving ships at sea. The four-day boats, therefore, have been designed with a clear deck from stern to stern, the funnels, bridge and masts forming a narrow group at one side. The landing deck will be always ready to receive airplanes with

mail, and to launch airplanes before the ship reaches port, weather permitting. This will provide a two-day Atlantic crossing for mail and express packages and for such passengers as care to make the journey. It is hoped, by applying modern engineering methods and by returning to the proved principles of speed, comfort, and frequent departures, that the American Merchant Marine can be restored to its former position of world-wide prestige, under private

ownership and operation, and without a subsidy from the Government.

Financing the Project.—A long term loan at a reasonable rate of interest, with reasonable sinking fund provisions, and an equivalently long contract for carrying mails based on frequency and speed of service, are believed to be the essential requirements to assure success. The loan is being sought from the Construction Loan Fund of the United States Shipping Board.

URBAN AND INTERURBAN RAILWAYS

BY HENRY W. BLAKE

SENIOR EDITOR, *Electric Railway Journal*

TRACK

Most of the electric railway track which has been abandoned during the past ten years has been in small towns and on highways between small towns. More electric railway track has been built during the past ten years than has been abandoned. Some lines which were abandoned have again been put in operation. The city system in Saginaw, Mich., is an example. On Jefferson Avenue, Detroit, a combination express and local service by cars and buses, was begun September 16, 1927, as an experiment. The cars run as express in the center of the avenue with stops about every 0.9 miles apart. Between express stops, local buses, known as transfer buses, pick up passengers and deposit them at the nearest express stop.

VEHICLES

Buses.—Each year the logical place of the bus and electric car in local transportation is being found to a greater extent. In 1927 there was a greater movement toward the consolidation of the two agencies in each city or district under one management. Most cities with a population of 150,000 or more can support both buses and cars, operated in supplementary service. In September, 1927, the number of buses operated by electric railway companies was 8,389, 1,831 buses over September, 1926.

Electric Cars.—For moving large numbers of persons the superiority of the electric car remained undisturbed. Thus, a survey of traffic conditions in Chicago, made public in January, 1927, showed that of the 1,693,506 people riding in or out of the central business area between 7 a. m. and 7 p. m. during a typical week day in May, 1926, 62.4 per cent used the street railways, surface or elevated, 13.1 per cent the steam railroads, 5.3 per cent the motor buses, and 19.2 per cent private automobiles. Figures indicative of the street space taken by the street cars, buses and passenger automobiles follows: street cars with 57.8 per cent of the passengers carried on the surface of the streets were responsible for 8.4 per cent of the vehicles used; the motor buses with 9.1 per cent of the passengers had 1.8 per cent of the vehicles, and the passenger autos with 33.1 per cent of the passengers carried had 98.8 per cent of the vehicles. With a smaller number of passengers carried than by the street cars, the automobiles were responsible for more than seventeen times as many accidents. The survey was made by the Chicago Association of Commerce, under the direction of Dr. Miller McClintock, Head of the Albert Russell Erskine Bureau For Street Traffic Research in Harvard University.

Car Design.—The marked development of the year in car design has

been the greater attention paid to the comfort of passengers and to outside appearance. Upholstered individual seats are becoming more general, especially on cars which have long runs. Recommendations of the 1927 Committee on Car Equipment, besides upholstered seats, are their upholstery in lighter colors, seat spacing irrespective of window post centers, flooring of linoleum, rubber or composition and better lighting. Suggestions for exterior appearance include tapered ends with a visor over the motorman's window and stream line painting.

Duralumin.—In construction, the Cleveland Railways has been experimenting with the use of duralumin in place of steel. Duralumin weighs about one third as much as steel and the cost per pound in structural form is about six times that of steel. For a car, then, the material cost in duralumin will be about double that in steel. In the car built in Cleveland, duralumin was substituted for steel with practically no changes in the section sizes, except an increase in the body side sheets, the truck side frames and the body bolsters. The weight of the car complete with equipment is 30,200 lbs. as compared with 42,200 lbs. for the same car made of steel.

Equipment.—In equipment there have been corresponding improvements, and in city service, where $1\frac{1}{2}$ to $1\frac{3}{4}$ m. p. h. p. s. used to be considered good acceleration, motors capable of giving 3 m. p. h. p. s. are now thought desirable. The greatest departure in equipment has been the construction of a car by the Springfield (Mass.) Street Railway and one by the Chicago & Joliet Electric Railway, with worm gear drive. In the Springfield car, dished steel wheels of 26 inches diameter are mounted on differential axles of the automobile type, each axle being independently driven through worm gear and separate motor. The brakes are of the internal expanding type, like those on buses. The Joliet truck is of much the same design.

FRANCHISES

The principal street railway fran-

chise granted during the year was for 30 years to the Kansas City Public Service Company, which operates the Kansas City railways. No valuation was stipulated on the property, but a return is permitted of \$2,000,000 a year after operating expenses and taxes are deducted, plus 8 per cent on any new capital. Earnings above this amount are to be put in a fare reduction fund, and when this fund reaches \$100,000, fares must be reduced. The fares to be charged are specified in the contract, the cash fare being 8 cents, with tokens at a slightly reduced rate, but if there should be an increase in the operating costs by 5 per cent in any one year, the company may apply to the Public Service Commission for an increase in fares, provided its net earnings do not amount to the \$2,000,000, plus 8 per cent on new capital mentioned above. The city may also petition for a reduction of fares if the company's net earnings are more than reasonably compensatory for the service rendered and a return upon the property used.

In accepting the franchise the company agreed to spend \$6,600,000 on its property within the next three years, half for betterments and half for rehabilitation. The first of these amounts is to be added to the capital account, but not the second. Ordinary maintenance and repairs are to be cared for by setting aside 16 per cent of the gross revenue in addition to the expenditure of the \$3,300,000 for rehabilitation just mentioned.

STREET CONGESTION

The chief obstacle at present to the supply of good street railway transportation in most cities is not higher fares. Public officials in most of the large cities have long since recognized the need of an adequate fare and have granted it. The chief handicap now to good service is the increased congestion of the streets, particularly at intersections. Improvements in traffic signals have helped, but the principal gain must come from the speeding up of traffic and an increase in available street space through reduction or elimination of parking in the downtown streets. This is espe-

cially necessary during the hours of greatest traffic between 7 to 9 a. m. and 5 to 7 p. m. Of the 43,000,000 daily passengers in the United States, more than 20,000,000 are handled during these two periods.

INTERURBAN ROADS

The fundamental conditions mentioned on the city railways apply also

to the interurban roads. There is a corresponding effort by them to attract passenger business by higher speed and more attractive and comfortable rolling stock operated on regular schedules over better maintained track. The failures among interurban roads have generally been among properties which were not able to carry out a program of this kind.

MANUFACTURING STATISTICS

By LEVERNE BEALES

CHIEF STATISTICIAN FOR MANUFACTURES, BUREAU OF THE CENSUS

MANUFACTURED PRODUCTS

According to statistics published by the U. S. Bureau of the Census at two-year intervals (the latest in 1925), the total selling value, f. o. b. factory, of the products of manufacturing plants and printing and publishing establishments increased from \$60,558,998,000 for 1923 to \$62,713,714,000 for 1925. These values include, however, large amounts of duplication due to the use of the products of certain establishments as materials by others. For example, the greater part of the products of the motor-vehicle bodies and motor-vehicle parts industry is used as materials by the motor vehicles industry, and consequently the values of such products enter into the total value twice. As a result of such duplications, the aggregate gross value of the products of all manufacturing establishments is much in excess of the aggregate net value of manufactured products in the form in which they reach the ultimate consumer. A rough estimate gives approximately 40 billions of dollars as the latter figure.

The following table shows, for 1925 and 1923, the value of products and the value added by manufacture (value of products less cost of materials) for each industry whose output in 1925 or in 1923 was valued at \$1,000,000,000 or more.

Motor Vehicles.—As was the case in 1923, the leading industry in 1925 was the manufacture of motor vehicles. The total factory value of complete motor vehicles (not including

motorcycles) manufactured in 1925 was \$3,198,123,000, as compared with \$3,163,328,000 for 1923. The slaughtering and meat-packing industry took the second place in 1925 with a total output valued at \$3,050,286,000, although in 1923 it occupied the third place with a value of \$2,585,804,000. In this shift in relative position, the slaughtering and meat-packing industry changed places with steel works and rolling mills, the value of whose products dropped from \$3,154,325,000 in 1923 to \$2,946,068,000 in 1925.

CHANGES IN VALUE

The census statistics reveal the fact that although 17 industries, as constituted for census purposes, each reported, for 1923, a total value of products amounting to over one billion dollars, only 15 industries reached this figure in 1925, the two industries dropping out of this group being boots and shoes, other than rubber and blast furnaces, the value of whose products decreased from \$1,000,078,000 to \$925,383,000 and from \$1,007,613,000 to \$765,286,000, respectively. Some indication of the changes in the industrial field is given by the fact that in 1925, as compared with 1923, the petroleum-refining industry rose from seventh place, with a total output valued at \$1,793,700,000, to fourth, with \$2,376,657,000, while electrical machinery, apparatus, and supplies, which ranked eleventh in 1923, with an output valued at \$1,293,002,000,

MANUFACTURING STATISTICS

Industry	Rank	Value of Products (expressed in thousands)	Value Added by Manufacture (expressed in thousands)
		Dollars	Dollars
All industries .....1925		62,713,714	26,778,066
.....1923		60,555,998	25,850,300
Industries with products valued at \$1,000,000,000 or more in 1925 or 1923			
Motor vehicles, not including motorcycles.....1925	1	3,198,123	1,089,931
.....1923	1	3,163,828	1,015,865
Slaughtering and meat packing, wholesale.....1925	2	3,050,286	425,094
.....1923	3	2,585,804	409,794
Steel works and rolling mills.....1925	3	2,946,068	1,134,107
.....1923	2	3,154,325	1,109,927
Petroleum refining .....1925	4	2,376,657	486,979
.....1923	7	1,793,700	368,647
Printing and publishing.....1925	5	2,269,638	1,659,579
.....1923	5	2,021,356	1,435,420
Foundry and machine-shop products, not elsewhere classified .....1925	6	2,232,986	1,349,278
.....1923	4	2,337,073	1,400,842
Cotton goods .....1925	7	1,714,368	637,215
.....1923	6	1,901,126	753,704
Electrical machinery, apparatus, and supplies...1925	8	1,540,002	903,310
.....1923	11	1,293,002	744,375
Motor-vehicle bodies and motor-vehicle parts....1925	9	1,523,280	660,559
.....1923	15	1,013,113	449,006
Lumber and timber products, not elsewhere classified .....1925	10	1,421,162	841,687
.....1923	8	1,494,462	921,398
Flour, feed, and other grain-mill products.....1925	11	1,298,015	172,636
.....1923	14	1,048,578	162,606
Clothing, women's, not elsewhere classified.....1925	12	1,293,705	569,406
.....1923	10	1,406,684	597,123
Bread and other bakery products.....1925	13	1,268,195	600,178
.....1923	13	1,122,906	548,386
Car and general construction and repairs, steam-railroad repair shops.....1925	14	1,248,867	714,959
.....1923	9	1,433,680	834,303
Clothing, men's, not elsewhere classified.....1925	15	1,087,238	529,767
.....1923	12	1,178,715	593,911
Blast furnaces .....1925	24	765,286	147,869
.....1923	16	1,007,613	179,983
Boots and shoes, other than rubber.....1925	18	925,383	443,751
.....1923	17	1,000,078	472,621

took the eighth rank in 1925, with \$1,540,002,000.

MANUFACTURES BY GROUPS

When the manufacturing industries covered by the census are arranged in more or less homogeneous groups, their contributions to the total value of products made in 1925 are as follows:

Food and kindred products...	\$10,418,536,000
Textiles and their products...	9,122,858,000
Iron and steel and their products, not including machinery	6,461,668,000

Lumber and allied products..	3,688,552,000
Leather and its manufactures	1,767,581,000
Rubber products	1,255,414,000
Paper, printing, and related industries	4,143,685,000
Chemicals and allied products	6,438,027,000
Stone, clay, and glass products	1,640,652,000
Metals and metal products, other than iron and steel..	2,833,770,000
Tobacco manufactures	1,091,001,000
Machinery, not including transportation equipment..	5,020,281,000
Musical instruments and phonographs	231,687,000
Transportation equipment, air, land, and water.....	5,451,753,000
Railroad repair shops.....	1,332,679,000
Miscellaneous industries	1,815,570,000

COGNATE SOCIETIES

- AMERICAN ASSOCIATION OF WOOLEN AND WORSTED MANUFACTURERS.—45 E. 17th St., New York, N. Y.
- AMERICAN AUTOMOBILE ASSOCIATION.—Mills Bldg., Washington, D. C.
- AMERICAN PAPER AND PULP ASSOCIATION.—18 E. 41st St., New York, N. Y.
- AMERICAN HARDWARE MANUFACTURERS' ASSOCIATION.—1819 Broadway, New York, N. Y.
- AMERICAN IRON, STEEL AND HEAVY HARDWARE ASSOCIATION.—47 W. 34th St., New York, N. Y.
- ELECTRICAL MANUFACTURERS' COUNCIL.—30 E. 42nd St., New York, N. Y.
- NATIONAL AMERICAN WHOLESALE LUMBER ASSOCIATION.—41 E. 42nd St., New York, N. Y.
- NATIONAL ASSOCIATION OF COTTON MANUFACTURERS.—80 Worth St., New York, N. Y.
- NATIONAL ASSOCIATION OF ELECTRICAL CONTRACTORS AND DEALERS.—15 W. 37th St., New York, N. Y.
- NATIONAL ASSOCIATION OF ICE INDUSTRIES.—163 W. Washington St., Chicago, Ill.
- NATIONAL ASSOCIATION OF MANUFACTURERS OF THE UNITED STATES OF AMERICA.—50 Church St., New York, N. Y.
- NATIONAL ASSOCIATION OF WOOL MANUFACTURERS.—80 Federal Street, Boston, Mass.
- NATIONAL AUTOMOBILE CHAMBER OF COMMERCE.—366 Madison Ave., New York, N. Y.
- NATIONAL ELECTRIC LIGHT ASSOCIATION.—29 W. 39th St., New York, N. Y.
- NATIONAL METAL TRADES ASSOCIATION.—111 Broadway, New York, N. Y.
- NEW YORK LUMBER TRADE ASSOCIATION.—17 W. 46th St., New York, N. Y.
- RUBBER ASSOCIATION OF AMERICA, INC.—250 W. 57th St., New York, N. Y.
- SILK ASSOCIATION OF AMERICA.—354 Fourth Ave., New York, N. Y.
- UNITED STATES BREWERS' ASSOCIATION.—50 Union Square, New York, N. Y.
- UNITED TYPOTHETÆ OF AMERICA.—600 W. Jackson Boulevard, Chicago, Ill.
- TRANSPORTATION AND COMMUNICATION**
- AERIAL LEAGUE OF AMERICA.—280 Madison Ave., New York, N. Y.
- AMERICAN ASSOCIATION OF RAILROAD SUPERINTENDENTS.—Union Station, St. Louis, Mo.
- AMERICAN ELECTRIC RAILWAY ASSOCIATION.—292 Madison Ave., New York, N. Y.
- AMERICAN MARINE ASSOCIATION.—15 Park Row, New York, N. Y.
- AMERICAN RAILWAY ASSOCIATION.—30 Vesey St., New York, N. Y.
- AMERICAN ROAD BUILDERS' ASSOCIATION.—37 W. 39th St., New York, N. Y.
- AMERICAN STEAMSHIP OWNERS' ASSOCIATION.—11 Broadway, New York, N. Y.
- AUTOMOBILE ASSOC. OF AMERICA.—Penn Ave., at 17th St., Washington, D. C.
- COMMITTEE ON PUBLIC RELATIONS OF THE EASTERN RAILWAY PRESIDENTS' CONFERENCE.—143 Liberty St., New York, N. Y.
- COUNCIL OF AMERICAN SHIPBUILDERS, INC.—111 Broadway, New York, N. Y.
- INTERNATIONAL AMATEUR RADIO UNION.—1711 Park St., Hartford, Conn.
- INTERNATIONAL FREE TRADE LEAGUE.—Arden, Wilmington, Delaware.
- MARITIME ASSOCIATION OF THE PORT OF NEW YORK.—78 Broad St., New York, N. Y.
- NATIONAL AERONAUTIC ASSOCIATION.—1623 H. St., N. W., Washington, D. C.
- NATIONAL ASSOCIATION OF BROADCASTERS.—1265 Broadway, New York, N. Y.
- NATIONAL ASSOCIATION OF OWNERS OF RAILROAD SECURITIES.
- NATIONAL COUNCIL OF AMERICAN IMPORTERS AND TRADERS, INC.—45 E. 17th St., New York, N. Y.
- NATIONAL HIGHWAY TRAFFIC ASSOCIATION.—12 E. 53rd St., New York, N. Y.

COGNATE SOCIETIES

NEW YORK STATE WATERWAYS ASSOCIATION.—1012 Prudential Building, Buffalo, New York.	TRAFFIC ASSOCIATION OF AMERICA.—27 William Street, New York, N. Y.
NORTH AMERICAN EXPORT GRAIN ASSOCIATION, INC.—2 Broadway, New York, N. Y.	TRAFFIC VIGILANCE LEAGUE, INC.—186 Fifth Ave., New York, N. Y.
RAILWAY BUSINESS ASSOCIATION.—Liberty Building, Philadelphia, Pa.	UNITED STATES SHIP OPERATORS' ASSOCIATION, INC.—149 Broadway, New York, N. Y.

PART FIVE

SOCIAL CONDITIONS AND AIMS

DIVISION XIV

SOCIAL PROBLEMS AND CONDITIONS

CRIME CONDITIONS IN THE UNITED STATES

BY BENNET MEAD

UNITED STATES BUREAU OF THE CENSUS

THE GENERAL SITUATION

Crime Wave Fictitious.—During the past year, there has come to be a more general realization by the public of the fact that the so-called "crime wave" has been primarily a "state of mind" rather than an actual condition. There is no reliable statistical evidence of an increase in the total number of offenses against the law. Such information as we have does indicate that during recent years there has been a considerable increase for certain offenses against property, notably for robbery and forgery. Such increases have, however, been more than offset by the marked decreases for a number of other offenses against property, especially for burglary and larceny.

There has also been a great increase in the number of persons punished for violations of liquor and drug laws, and likewise for violations of traffic laws. These increases have been the inevitable result of the struggle to enforce new legislation, and of the rapid growth of traffic congestion, and do not represent a genuine increase in crime. Furthermore, the increase for these offenses has been more than counterbalanced by the decrease which has occurred for such offenses as drunkenness, disorderly conduct, and vagrancy.

Although the alleged "crime wave"

is largely fictitious, it should none the less be emphasized that crime conditions have been bad for many generations, and that our high crime rate represents a chronically bad state of affairs, rather than a sudden or recent development. Thus, the sensational talk and publicity relative to the "crime wave" has been of positive value in directing attention to the great need for increasing the efficiency of our law enforcement machinery, and for reducing the appalling volume of crime by appropriate preventive measures.

Comparisons.—Such comparisons as it has been feasible to make between the United States and foreign countries; and between some few American and European cities, indicate that homicide, robbery, burglary, and various other offenses are far more prevalent in this country than elsewhere.

Annual Cost of Crime.—Authoritative estimates of the total annual cost of crime, including both direct losses and also indirect costs, such as the cost of operating the law enforcement agencies and correctional institutions, range from \$5,000,000,000 up.

HOMICIDE

Numbers.—Homicide is the only offense for which even the approxi-

mate number of crimes committed annually in the United States is known. The mortality reports published annually by the United States Census Bureau, show the number of homicide deaths for which death certificates are issued. The figures include criminal homicides and also "justifiable" homicides. In the death registration area in 1926, there were 9,210 homicides, or 88 per million of population. The registration area in 1926 covered 89.8 per cent of the country's total population. On the basis of these figures it is estimated that approximately 10,000 homicides were officially registered in the entire country.

Trends.—In order to judge correctly of the trend of homicide over any period, it is necessary to compare rates which cover the same area for the whole period. The 21 states, which in 1910 formed the death registration area, had 55 homicide deaths in 1926 per million of population, as against 56 per million in 1925, and 57 per million in 1924. During the past 17 years, the homicide rate for this group of states has alternately increased and decreased between the minimum of 46 per million in 1910 and the maximum of 60 per million in 1917. The homicide rate has been somewhat higher, on the whole, during the period from 1917 to 1926 than during the interval from 1910 to 1916. There has been no continuous upward trend of the homicide rate during recent years. There is no question, however, that the homicide rate in this country is scandalously high as compared to the rates in foreign countries. For example, Canada had, in 1924, only 98 homicides, or 15 per million population, as against the rate of 85 per million for the United States registration area in 1924.

Causes.—The mortality statistics suggest at least two important factors which help to swell our death rate from murder and manslaughter. The first is the wholesale manufacture and sale of firearms, subject to only slight restrictions, and the prevalence of gun-toting which is the inevitable result of such wholesale distribution of deadly weapons. Of 9,210

homicides in the registration area in 1926, firearms were the death-dealing agency in 6,377 cases, or 69.2 per cent of the total.

A second factor which underlies our high homicide rate, is our large negro population, which greatly exceeds the white population in its homicide death rate. In 1926, for example, the homicide death rate in the registration area was 454 per million for the colored population, as against 52 per million for the white population. There were, therefore, nearly nine times as many homicide deaths, in proportion to population, for the colored as for the white inhabitants of the United States.

ANNUAL PRISON CENSUS—1926

Prisons and Reformatories.—During the past year the United States Census Bureau has inaugurated a yearly census of state and Federal prisons and reformatories. Preliminary results of this census, covering 31 states, are available. For these states there were 34.1 prisoners received in 1926 per 100,000 of the general population, as compared with 27.9 per 100,000 received in 1923. In other words, the number of prison admissions has increased much more rapidly than the general population.

It should be noted that the number of prisoners committed annually to the prisons and reformatories is affected, not only by the prevalence of crime, but also by such factors as the character and effectiveness of the local policies and machinery of law enforcement. A large increase in the number of admissions may represent an increase in the severity of the penalties imposed by the courts, or in the percentage of offenders who are arrested and imprisoned, rather than an increase in crime.

MISSOURI CRIME SURVEY

An Accurate Crime Picture.—In the absence of nation-wide criminal statistics covering all phases of law enforcement, it is necessary for the present to judge of crime conditions in the United States largely from the results of the studies which have been made by certain state and city crime commissions. The first state-

wide study of this kind was the Missouri Crime Survey, conducted by the Missouri Association for Criminal Justice. The report of this survey presents an accurate picture of the crime situation in the state and the operations of the law enforcement machinery in attempting to repress crime. The detailed statistics of this survey cover the three principal cities of Missouri, and 36 rural counties in all sections of the state. The statistics for the three urban counties represent a period of two years, and those for the rural counties a period of one year, ending Oct. 1, 1924.

St. Louis Report.—In the city of St. Louis, during one year, 13,444 felonies, or serious crimes, were reported to the police under the heads of homicide, robbery, larceny, embezzlement, fraud, forgery, and automobile offenses. Only 964 arrest warrants were issued. That is, criminal charges were brought against the offenders for only 7.17 per cent of the crimes which were reported. For the 13,444 felonies, only 374 offenders were convicted and punished. Those punished thus represent less than 3 per cent (2.78%) of the number of reported crimes. The percentage punished, out of total crimes reported, for the several offense groups was as follows:

Homicide	16.8%	Embezzlement	
Robbery	4.1%	and fraud ..	4.6%
Burglary	4.0%	Forgery	4.0%
Larceny	2.2%	Auto offenses..	0.5%

In the Counties.—In all of the Missouri counties covered in the survey, out of 7,032 warrants issued in felony cases, the offenders were convicted and sentenced in only 38.1 per cent of the cases; and the sentence was executed for only 31.7 per cent of the total. Over one fourth (26.1 per cent) of the cases were eliminated in the preliminary hearing. In all the steps of judicial procedure, a total of 21.4 per cent of the cases were eliminated by actions of the prosecutor; and 19.4 per cent were eliminated by actions of the judge. These statistics, as well as many others developed by the Missouri Survey, demonstrate in striking fashion the ineffectiveness of existing law enforce-

ment agencies for protecting life and property. It is apparent that only a very small percentage of lawbreakers are apprehended, and that of this fraction, the great majority slip through the net without being required to pay any of the penalties imposed by the law.

BETTER CRIMINAL STATISTICS SOUGHT

Present Statistics Inadequate.—The past year has been marked by significant developments towards more adequate statistics of crime and of law enforcement. Perhaps the most important step is the wider recognition of the fact that the existing statistics are utterly inadequate to guide the activities of official and unofficial agencies which are engaged in the struggle against crime.

The Federal census statistics cover, as yet, only that small fraction of law-breakers who are punished by imprisonment. No nation-wide statistics are at present compiled concerning those groups of offenders who are handled by the courts, the police, and the parole and probation agencies. Finally, except for the one offense of homicide, this country has no comprehensive national statistics of crimes committed, or of crimes reported to the police and other law enforcement agencies. Even the Federal census statistics of homicide do not as yet cover the whole of the country.

During recent years our lack of adequate criminal statistics had been repeatedly pointed out by such important national organizations as The American Prison Association, The American Institute of Criminal Law and Criminology, The International Association of Chiefs of Police, The American Bar Association, and the National Crime Commission.

At the National Conference on the Reduction of Crime, which was called by the National Crime Commission on Nov. 2 and 3, 1927, considerable stress was placed on the deficiencies of American statistics of crime and law enforcement.

In a number of states, notably in Kansas and Oregon, state-wide court statistics are being developed under

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supervision of the State Judicial Councils or other central state agencies.

The International Association of Chiefs of Police is engaged in a detailed study of the problem of developing more adequate local police statistics. Preliminary studies along

the same line were made by the American Institute of Criminal Law and Criminology, and served as the basis for the suggested plan for police statistics, published by the United States Census Bureau, in its manual entitled *Instructions for Compiling Criminal Statistics* (1926).

PENOLOGY AND PRISON LABOR

By HASTINGS HORNELL HART

RUSSELL SAGE FOUNDATION, NEW YORK

GENERAL PROGRESS

A similar report to that which appeared in *THE AMERICAN YEAR BOOK* for 1926, must be made for 1927, namely, that the year has, on the whole, shown very little progress in the prison field, and in fact some retrogressions here and there because of the unusual number of spectacular disturbances; but that there has been some genuine progress in this field during the past year.

INSTITUTIONS FOR WOMEN

Federal Industrial Institution.—The most important contribution to prison buildings during 1927 has been the Federal Industrial Institution for Women at Alderson, W. Va., which received its first inmates in May, 1927. The institution is still incomplete but it is expected that it will be finished to a capacity of 500 by the middle of 1928. The site is an admirable one, providing two campuses at different levels, affording excellent plats for institution buildings with a negligible amount of grading. The farm is separated from the neighboring village of Alderson by two miles of close mesh wire fence, designed not to prevent the escape of inmates but to bar intrusion by outsiders.

Features.—The prison features of the older correctional institutions for women at Auburn, N. Y., Indianapolis, Ind., and Framingham, Mass., were discarded and the institution is built along the lines of the cottage institutions for women at Bedford Hills, N. Y., Clinton, N. J., and Shakopee, Minn. The reception cot-

tage will contain six barred cells for newcomers of uncertain character or physical condition and there will be two "decreased privilege" buildings, with barred windows, for women whose character and conduct are prejudicial to the morale of the institution. A cottage is being built for the safe care of 20 drug addicts in the early stages of their treatment. Throughout the institution a separate room will be provided for each woman.

An excellent industrial building has well lighted workrooms and school rooms for instruction in domestic science and industrial arts. A well-equipped power sewing plant has been installed. The laundry has the most modern machinery. The farm and dairy are conducted by a trained woman farmer experienced in dealing with delinquent young women. Other industries will be introduced as the institution develops.

Detroit House of Correction.—A second important institution for delinquent women is the new Detroit House of Correction for Women which has an elaborate plant and is expected to care for delinquent women of the entire state of Michigan.

U. S. INDUSTRIAL REFORMATORY

Improvements.—Considerable progress has been made during the past year in cleaning up the neglected farm, removing discarded buildings, cement platforms, and iron pipe, and in making habitable the buildings which furnish temporary accommodations for the inmates. Congress made liberal appropriations for mainte-

nance and equipment but has thus far made no appropriations for permanent buildings. An appropriation was made for the establishment of a brick plant which will furnish material for buildings and it is anticipated that the present Congress will provide the means for the rapid completion of this important institution which will be full to the doors as soon as it is completed.

Discipline and Morale.—The prisoners thus far received have been young men under thirty years of age transferred from the U. S. Penitentiaries at Atlanta and Leavenworth. A reformatory discipline has been inaugurated with a well-selected staff of superior quality. A good morale has been established and it is hoped to escape the evils which have arisen at the three United States Penitentiaries of the great proportion of unemployed men.

The general plans for the reformatory have been agreed upon. They will include, first, a cell house with a comparatively small yard enclosed by a wall; it will be used as a receiving building for the examination, classification, and assignment of prisoners. There will be, second, for the greater part of the prisoners, dormitories containing 100 men each, following the general plans of the dormitories at the Indiana State Farm and the District of Columbia Workhouse at Occoquan. A third feature will be the building of several cottages, to hold 50 men each, with a separate room for each man, without barred windows or prison walls. These cottages will be used for men who have proved themselves reliable and worthy of special privileges, and also for those who are approaching the time of their release, as a preparation for free life.

COUNTY JAILS

Houston, Tex.—A new county jail has recently been completed at Houston, Tex. Much study was given to this project and the effort was made to provide adequate classification and equipment so that the prisoners might be properly classified, might receive proper medical treatment, and that the evils resulting

from jail life might be minimized. This effort was seriously crippled by the retention of an inadequate and badly located site, but the jail is on the whole one of the best in the entire south.

The new Cook County Jail at Chicago, which is being built in conjunction with a new criminal court building, is well located on 11 acres of land, about six miles from the site of the former jail. The jail and courthouse together will cost about \$7,000,000. The jail will have a capacity of about 1500 prisoners and it is built on what is probably the best large jail plan in the United States.

The new Wayne County Jail, at Detroit, which is to cost \$1,000,000, is about half completed. The appropriation is inadequate for so large a plant, resulting in a corresponding inadequacy for its purpose. The site is too small, the hospital facilities are entirely insufficient, provision for classification will be imperfect and it will be difficult if not impossible to provide suitable exercise for prisoners.

UNITED STATES PRISONERS

Care and Treatment.—A resolution has been introduced in the House of Representatives providing for an investigation of the care and treatment of United States prisoners in the five Federal institutions and in state and county institutions. The Federal Government is making use of about 900 county jails throughout the country, having no jails of its own. An acute situation has arisen because the United States penitentiaries are desperately overcrowded and the local jails in many of the larger cities and the frontier county seats are congested to such a degree that the destructive practice of keeping two prisoners in a single cell has become very general and in some jails a still larger number of prisoners are crowded into cells which are adequate for only a single occupant.

Federal Prisoners in Local Jails.—The keeping of United States prisoners in local jails is a matter of courtesy to the general government, regulated by state laws. It is a rec-

ognized fact that the Federal Government has no control over its prisoners in county jails because it is provided by Federal statute that such prisoners shall be subject to the same regulations and receive the same treatment as local prisoners committed by state authority. Owing to the crowded condition of the local jails, it is increasingly difficult to find accommodation for Federal prisoners therein and in several cases the local authorities have notified the Federal Government that they are no longer able to receive and care for Federal prisoners. Under these circumstances it appears to be necessary for Congress to make a study of the situation in order to decide what measures should be taken to meet a situation which has become acute.

PRISON LABOR

Public Interest.—The past year has marked a definite increase of public interest in the problem of prison labor. Under the leadership of the National Crime Commission a meeting was held in Washington, at which the various phases of the problem were discussed by the following persons: "Prison Labor Problem," Sam A. Lewisohn; "The General Problem," E. R. Cass; "The Manufacturers' Standpoint on Prison Labor," A. F. Allison; "The Attitude of Organized Labor," Edward F. McGrady; "The States' Use System," Major Leroy Hodges.

The directors of the General Federation of Women's Clubs at their annual meeting (40 states being represented) devoted a day to the consideration of this problem. There appeared a strong sentiment backing the Hawes-Cooper Bill to divest prison-made goods of their interstate character. Advocates of this bill believe that the forces of organized labor and manufacturers, supplemented by state officials from advanced states such as New Jersey and New York, combined with the women's forces, will solve permanently the problem of prison labor on a constructive basis.

A report on prison labor which is the result of the work of a special

committee of the United States Department of Commerce appointed two years ago has been completed and is now to be released.

The Associates for Government Service, organized in 1920 to facilitate the sale of prison-made goods under the states' use system, has changed its incorporation from the General Incorporation Law of New York State which required a stock issue, to the General Incorporation Membership Law, popularly known as the Charity Law, and will operate as a purely charitable corporation.

The Elizabeth Fry Foundation, dedicated to the memory of Elizabeth Fry, the first person to take work into the prisons for the benefit of prisoners, has been incorporated under the Charity Law of the District of Columbia. It aims to correct the present difficulties in regard to prison labor and to provide for research in social economy and human engineering. It plans to operate under the direction and advice of Columbia University.

Industrial Survey.—With an appropriation made by the Bureau of Social Hygiene, the National Committee on Prisons and Prison Labor has made a survey of the industries suitable for correctional institutions for women and a report of the survey has been printed and made available to the women's correctional institutions throughout the country.

Prison Wage Question.—The New York State authorities have for years endeavored to build up a practical and efficient labor system in the state's prisons on the state use plan, but thus far with very little success. It is generally recognized that payment of at least a small wage is desirable in order to promote a spirit of industry among the prisoners. For many years wages have been paid to the inmates of New York state prisons at the ridiculous rate of one and one-half cents per day. Recently a law was enacted to permit an increase of this rate to not exceeding 25 cents per day, but the increase was conditional upon the reservation of a certain amount of profit for the state treasury with the result that while a very few prisoners received from 15

to 25 cents per day the great majority continued to receive the low rate of a cent and one-half.

Prison Control in New York.—The legislature has centralized the control of all of the state prisons, including prison labor, in a Commissioner of Correction who is now making strenuous efforts to establish a rational and productive labor system on the state use plan.

THE NATIONAL CRIME COMMISSION

Washington Conference.—One of the outstanding events of 1927 with reference to penology and criminology was the conference called by the National Crime Commission in Washington in November. This conference brought together about 250 people, including representatives of the several state crime commissions, public officials who have to deal with crime, statisticians and students of crime conditions, together with a large number of penologists and representatives of the American Prison Association and other organizations dealing with delinquency in various forms.

Change in Attitude.—A very interesting feature of the conference was the manifest change of attitude on the part of those who have been most active in promoting the organization and development of national and state crime commissions. This was expressed in the closing session by Newton D. Baker, Chairman of the conference, when he said: "The National Crime Commission wants to be useful. Its function has decidedly changed from that to which it set itself when it started. I don't know just what anybody else thought at the time, but my own first impulse was that the nine or ten of us who met in New York would soon solve the crime problem and dispose of the whole matter. Our function has changed; our point of view has changed. We realize that the real work of the Crime Commission is going to be done in the state commissions and in the local commissions, and if we can galvanize them just a bit; if we can stimulate and support and encourage and aid them, we feel that the National Crime Commis-

sion's functions will then best be done."

STATE CRIME COMMISSIONS

Enlarging Their Scope.—The most progressive state crime commissions are enlarging the scope of their studies so as to cover a considerable field of criminology and penology. For example, the New York State Crime Commission has held hearings on the subject of the causes of crime, application of psychology and psychiatry to the study and treatment of criminals, probation and parole. They are taking up also the subject of penology, including not only legislation with reference to the punishment of criminals, but prison administration and architecture. They sent a committee to study the new forms of prison architecture which have been developed in the District of Columbia Workhouse and the District of Columbia Reformatory. They recognize that criminal statistics and criminal legislation are only a beginning of any practical effort for the diminution and prevention of crime.

Crime Study.—The representatives of the leading state crime commissions emphasized the necessity for a careful study of crime conditions and, especially, of causes of crime, and they reported active efforts to promote intelligent study and the collecting and recording of trustworthy information with reference to the number and kinds of crime, the operation of the police, the courts, the prisons, the reformatories, and the application of different methods of dealing with criminals, including fines, imprisonment, probation, and parole; also with reference to preventive measures, especially as applied to the youth of the country.

These organizations appear to have revised their first impressions as to the importance of cooperation between their organizations and the philanthropic and social bodies which have been dealing with the subject of crime in the past. They appear to have come to recognize also that there are no cure-alls for crime any more than for sickness, poverty, vice, and other ills which afflict the community.

PREVENTIVE WORK IN DELINQUENCY

They appeared also to recognize that time is an essential element in dealing with such matters and that hasty action is sure to be followed by discouraging reaction.

ANNUAL PRISON CENSUS

Number of Prisoners.—In September, 1927, the Bureau of the Census published its first bulletin with partial results of its first annual census of state prisons and reformatories. This partial report covered only 31 of the 48 states of the Union. It showed that the number of prisoners in state prisons and reformatories of those 31 states was as follows: January 1, 1923, 47,578; January 1, 1926, 59,692; and January 1, 1927, 63,828. The number of prisoners in confinement per 100,000 of the general population increased from 66.6 on January 1, 1923, to 84.1 on January 1, 1927.

Importance to Penal Study.—This annual census of the prison population, published within the succeeding year, will greatly promote intelligent study of penal questions. Heretofore prison enumerations have been

made at irregular intervals as 1904, 1910 and 1923. The results of such studies have not been completed for two or three years and the material has become stale before it was available.

TRAINING SCHOOL FOR REFORMATORY OFFICERS

Great Britain has maintained a national school for training officers employed in prisons and reformatories with satisfactory results in improving the service, but no such school has existed in the United States, except sporadic efforts in a few individual institutions. An experimental training school was carried on during the fiscal year 1926-1927 at the Children's Village, Dobbs Ferry, N. Y., by the mutual cooperation of the trustees of the Children's Village and an Advisory Council consisting of eleven leaders in various lines of social work. Of the 14 students who graduated last year, 12 were placed immediately in executive positions. The new seminar opens February 5, 1928, with a promising class and is a prospect of a summer institute.

PREVENTIVE WORK IN DELINQUENCY

BY DOUGLAS P. FALCONER

EXECUTIVE SECRETARY, CHILDREN'S AID SOCIETY, BUFFALO

THE GENERAL SITUATION

Public Interest.—This year has seen again a great discussion of delinquency, with widespread public interest and many articles treating the subject from various angles appearing both in popular and technical journals. The example set by the so-called Baumes laws in New York State in 1926, imposing more drastic punishments upon criminals, has been followed by North and South Dakota, Kansas, Oregon, California, New Jersey and Vermont. Vigilance committees have been organized in various parts of the country, and Iowa and Illinois report a lessening of bank robberies following the formation of voluntary citizen committees.

Fear versus Crime Study.—A considerable percentage of our popula-

tion is in the grip of a horrid fear, and more hysterical legislation may be expected. At the same time, however, a counter current is gaining strength. Scientific study of crime and criminals, the treatment of crime as a social disease, and the importance of mental and physical defects and environmental factors are being stressed by many writers of influence, such as Harry Elmer Barnes, Philip A. Parsons, Joseph Jastrow, Edgar Doll, F. E. Haynes, George W. Kirchwey, Hastings H. Hart, Edwin J. Cooley, Marian Van Waters. The American Bar Association, meeting in Buffalo in September, stressed the need of trained psychologists, psychiatrists and sociologists in criminal procedure. The National Conference for the Reduction of Crime, meeting

in Washington, emphasized the importance of scientific study and individual treatment. The Baumes Commission itself has turned its attention to preventive efforts and, on the whole, the real problems of crime are more clearly defined and more intelligent efforts are being made to understand and treat them.

PAROLE

Alger Report.—George W. Alger, appointed by Governor Smith to study the parole system in New York State, has issued a masterly report, courageously facing the weaknesses of the present parole system, and calling attention to the fact that real parole, under adequate supervision, has never been tried. He urges that a sincere experiment be made by a reorganized parole commission, with a sufficient staff of well trained and capable parole officers. He points out the enormous cost of attempting to segregate for long periods of time, or for life, the people who commit the more serious crimes, and urges that efforts at individual adjustments be made before the State is further committed to this expensive and harsh procedure.

CRIMINAL STATISTICS

Robinson Report.—Louis N. Robinson, secretary of the subcommittee on Pardons, Parole, Probation, Penal Laws and Institutional Correction of the National Crime Commission, has issued a stimulating report showing that we have no criminal statistics that are of any value, and as a result we do not know how much crime is committed in this country, how much of it is reported to the police, in what percentage of cases reported an arrest is made, or what happens to persons arrested. Knowledge of these basic facts is essential before an adequate program can be developed.

Federal Statistics.—The National Crime Commission is urgently calling the attention of the twenty-six State Crime Commissions and other public officials to this situation. The Federal Government will collect and annually publish statistics from the state prisons or penitentiaries, and from the state reformatories for

adults, as well as from the Federal institutions. This, however, is only a beginning, since only about nine and one-half per cent of the total commitments to our penal and corrective institutions will be covered. Vast and intelligent efforts will have to be made to bring order out of the chaos prevailing in the field at large.

IDENTIFICATION

Bureaus and Their Use.—In the same report, Mr. Robinson urges that greater attention be given to the identification of criminals. There is the Federal Bureau, intelligently handled, but only scantily used; there are a few State Bureaus, and nearly all police departments in the larger cities have their local identification bureaus. It is recommended that they should be reorganized into one great national system, with adequate facilities provided for the exchange of information. They are, of course, based on finger printing and Bertillon measurements, as the national system would probably be.

Finger Printing.—The matter of identification is limited primarily to persons committing felonies, but in the City of Buffalo, a committee which has been studying the records of the City Court (its report has been recently released) recommend the finger-printing, upon arrest, of all persons charged with the commission of either a felony or a misdemeanor, with safeguards in case of acquittal. It is hoped thereby to establish identification for the use of the Court and at the same time to discover persons, arrested elsewhere on felony charges, who come here from other communities and are arrested in Buffalo only on minor charges. If only felons are finger-printed, such a prisoner would escape detection. The inferior courts throughout the country have inadequate identification systems, but as there is a growing consciousness of the importance of identification in these courts, the subject will probably receive greater attention in the future.

PROTECTION AND PUNISHMENT

Sterilization.—The United States Supreme Court has declared constitu-

tional the Virginia Statute providing for the sterilization of mental defectives. This means that a statute has been framed, which, while intended primarily to promote the welfare of society, nevertheless protects the constitutional rights of the individual. Widespread interest has been shown in this decision, but the movement in favor of this type of legislation does not seem to be gaining in power.

Capital Punishment.—In the *October Survey*, Warden Lawes, of Sing Sing Prison, reports that the League to Abolish Capital Punishment is rapidly growing. This was doubtless given impetus by the Sacco-Vanzetti case. Other causes for the growth are given, as follows: 1. No fallible human agencies should impose irrevocable sentences. 2. Society, through its neglect of social conditions, is largely responsible for crime, and should not therefore take the lives of victims of this social neglect. 3. Many jurors object to assuming the responsibility of imposing capital punishment. In eight states capital punishment has been abolished with no resulting increase in crime.

Prohibition Violation.—Lawlessness on the part of officials has received much attention in public discussion. This has centered largely around one point, the open violation of the prohibition law by public officials, but has included such procedures as the "third degree," a practice alleged to be in force in many police departments. Oswald Garrison Villard challenges our attention to the following: "The wonder really is, not that the law stands so low, but that it has any standing at all . . . in view of the widespread official criminality," and suggests the following: "From this day forward all officials, whether of a municipality, a county, a state, or of the Federal Government, shall themselves cease from all violations of the laws, state and national, and of the Constitution of the United States. Let the physicians of the law first heal themselves."

Governor Smith's Recommendations.—The most outstanding event of the year, however, was the recom-

mendations made by Alfred E. Smith, Governor of New York, to the New York State Crime Commission. He recommended that the power of sentencing prisoners convicted of felonies should be taken from the judges and placed in a Board, and that this Board should determine whether a prisoner convicted of a felony should go to an insane asylum or be sent to prison, the extent of his confinement, the nature of his treatment and the time of his parole. He suggested that this Board should be composed of psychiatrists and experts in criminology, at a salary of \$25,000. The total cost of such an experiment may be a million dollars, but he refers to this as a trivial amount when the benefits of this system are considered. He proposed that there be a clearing house to which all prisoners should be taken before sentence, for study and observation, that the jury should determine only the guilt or innocence of the prisoner who would then be turned over to this Board for disposition. He would also remove from the judges the power of sentencing to death, believing that this power has done more than anything else to prevent convictions for murder in the first degree. He also proposed that a new type of parole board be formed, with the Commissioner of Corrections, and the warden of the prison, where the prisoner is incarcerated, as members and a third member appointed after Civil Service examination, and that there should be an adequate parole staff to insure constructive supervision.

These suggestions of the Governor, while not new, are startling. Because of the Governor's prominence and influence they were followed by widespread discussion which will probably do more to inform the public as to the real nature of crime and the individual criminal than all of the technical reports issued in the last decade. The Governor recommended that the New York State Crime Commission ask the Legislature for an extended lease of life to study these problems and, if found advisable, to prepare the necessary legislation and constitutional amendment.

Scientific Study of Crime.—No panacea has been discovered for the prevention of crime, but perhaps the most hopeful aspect of the past year's developments is the growing emphasis on the need to study crime scientifically. Not until the criminal is really understood can proper measures be taken to prevent the commission of crime.

ORGANIZED SOCIAL WORK

BY HORNE LL HART

PROFESSOR, BRYN MAWR COLLEGE

MOUNTING BILL FOR RELIEF

Prosperity Effects.—The widespread prosperity in the United States during the past few years has been a byword. Unemployment has been rare; real wages have probably been higher than ever before in the world's history. Hours of work have been shorter; disease and death rates have been swiftly declining to new low levels. All these factors make for a reduction of poverty. Yet the bill for relief has been increasing. Between 1916 and 1925, according to data published by Ralph G. Hurlin, the relief expenditures of 96 representative organizations, after due corrections have been made for increase in population and in cost of living, increased 71 per cent on the average, and the relief per family (corrected for increased cost of living) had increased 48 per cent.

Commenting on these facts, Edward D. Lynde, General Secretary of the Cleveland Associated Charities observed:

We have been challenged by prominent men, in community funds and elsewhere, to show results from our larger expenditure or to curtail our expenses radically both for service salaries and relief. Our present approach to case work is literally in danger of being undermined and our policies may have to undergo a complete reversal unless this expenditure can be clearly proven to be justifiable.

Relief Costs.—Using the experience of the Cleveland Associated Charities as a basis, Mr. Lynde has analyzed certain factors related to the increase in relief costs. He finds that the demands upon the organization, as represented by applications, increased more rapidly than relief expenditures. The proportion of cases where the family itself applied almost doubled

in ten years. Seeking out the causes for these multiplying applications, he suggests, among others, the following:

The tendency in a community fund city of many applicants for aid is to regard their contributions to the community fund as an insurance against all misfortunes, such as unemployment and sickness.

The wider community responsibility placed upon a family agency in a community fund city. The agency can no longer turn over its responsibility to some church or sectarian relief society.

The increasing recognition in the community of the importance of centralized relief giving, in order that case work may accompany relief.

The tendency of public sentiment to become more and more humane.

The tendency of dependence today to become a little less uncomfortable for people.

Living Standards.—A somewhat disconcerting phase of the relief situation is that charitable organizations have set higher standards of living as goals for their clients than are attainable by many self-supporting families. A study of 439 families of self-supporting unskilled and semi-skilled workmen in Chicago revealed that in two-thirds of the families the total earnings of the chief wage earner, as reported by his employer, were inadequate to maintain his family up to the standard budget of the social agencies. Even including earnings by wives and children, the total family income of nearly half of the families studied was below the standard budget of the social agencies. In Cleveland, the budget used by some of the social agencies is such that, according to figures secured from the Chamber of Commerce, the average unskilled workman, earning average wages but working every single working day in the year without

loss of a day from unemployment or sickness, would not have sufficient income to maintain a wife and three children from 11 to 15 years of age on the standard budget of the Associated Charities, even if items for medical care and recreation were excluded.

SOCIAL JUSTICE AND SOCIAL WORK

Reforms.—In his summary of the fifty-fourth annual meeting of the National Conference of Social Work, held in Des Moines, the president, John A. Lapp said:

The attempt was made at the general sessions to take up embattled causes needing clarification and support. Justice in the social order, the challenge to democracy's right to control evils, the school and its relation to social welfare, rural social problems, the Church and social justice, modern criminal law tendencies, the rehabilitation of cripples, international social work problems and the social consequences of the present immigration law were given prominent places.

The discussions at the Conference indicated a greater readiness than for some time past to consider the larger questions of social reform. A genuine response of approval came for those papers and discussions which attacked fearlessly existing evils of the social order. The search for causes of human disaster was more intense and social legislation and reforms to check the causes were more readily approved than at any time, since the reactions caused by the war spirit of repression and its injection into the political life of the country. Perhaps it may be assumed that social workers are beginning to think less of being the salvage corps of society and more of being the architects or assistant architects of the social structure.

Causes of Dependency.—By way of contrast with this emphasis, a summary of the conference noted as insurgencies "the vague questionings of some in each of the sections as to the potency of external conditions in individual disaster—environmental determinism, it might be called."

Such an insurgency questions the determining power which has been attributed commonly to external handicaps; looks at the person behind, to seek in his emotion patterns the source of some of the failures which have beset him.

The psychiatrist seems to view the family chiefly as a set of emotional relationships. The physical, the social, the economic, the legal, the psychiatrist tries to look at and past.

He sees that all human beings possess at an early age feelings of anxiety, fear, guilt and inferiority. Since parents quite generally have not handled these problems well, all other aspects of the child's life may be greatly affected by the success or failure with which this early sense of insecurity is met. Many of the later difficulties which seem to be social, or economic, or legal, appear to the psychiatrist as symptoms,—just as pain is a symptom of trouble that lies deeper in the emotional life of the individual.

Such a point of view wipes out the tag of "privileged" and "under-privileged," and leaves most of mankind adrift in the same boat, social worker and client together.

Case Approach.—Social workers have begun to recognize that mental hygiene applies to themselves as well as to their clients. The case worker needs to realize the universal relationship of treatment procedure to her own life experience. The worker's early setting is bound to contribute to her attitudes, characteristics, biases and ideals, blindspots and identifications on the job, concluded with the handling of these mechanisms by the instructor or supervisor.

The case approach applies not merely to clients and social workers but also to donors and volunteers.

MEASURING RESULTS

Attitude Tests.—The enthusiasm which social workers have developed in recent years for applying to their jobs and to their results objective quantitative measurements has continued to grow. An instance was a report at the National Conference on an experiment in testing attitudes toward family social work. It was the object to ascertain whether prejudices against family work known to exist in the past still persist in certain communities; and whether new ideas are understood and approved.

A recent arresting suggestion is that whenever a social case is closed, an attempt be made to estimate to what degree the treatment of that case fell short of ideal successful case work achievement. The degree of failure can be classified as follows:

XIV. SOCIAL PROBLEMS AND CONDITIONS

(1) Pressure of work (or lack of an adequate number of workers).

(2) Instability of staff, resulting in frequent change of workers for the family.

(3) Lack of training or educational background of workers. This would include the lack of insight, awareness, and other qualities necessary for good case work.

(4) Personality difficulty between the client and the worker, or any emotional factors in the situation.

(5) Inadequacy of present development of case work technique—or limitations of the current conception of case work.

(6) Current limitations in the technique of coöperating professions. For example, at present we have very little success with drug addicts and with certain types of criminals; largely because medicine, psychiatry, or whatever sciences are responsible, have not advanced sufficiently for a thorough understanding of these problems.

(7) Conditioning factors arising from racial backgrounds, that can only be overcome by very slow educational methods (as for instance, alcoholism among the Poles).

(8) Failure to gain coöperation of other agencies for the carrying out of treatment.

(9) Reason unknown because, through inadequate investigation, case problems were not clearly defined.

Much of the attempt to measure social work, and to apply scientific methods to its appraisal and improvement, has utilized the statistical method. At the same time, a marked tendency appears toward the refinement of non-statistical methods.

REFORMING FAMILY LIFE

Family Welfare.—The fiftieth birthday of the family welfare movement in this country was celebrated by a Conference on Family Life in Buffalo in October. It made clear that the family welfare movement in this country has itself given an outstanding example of parenthood. It has raised a brood of infant undertakings which now have assumed the independence of maturity such as labor legislation, workmen's compensation, mothers' pensions, efforts to promote better housing, the planning of community life to promote happier and healthier living, many of the activities now included in the science of public health, or such applications of medical science as psychiatric social work. Its own distinctive child, the casework method, has been adopted by educators, penologists, and other specialized practitioners of the social sciences.

That the bettering of marriage may

be as important an advance during the next fifty years as the gain in public health has been in the past fifty was the prophecy brought before the Conference on Family Life.

RURAL SOCIAL WORK

Points of View.—The fact that the National Conference on Family Life was held in the heart of the corn belt, was seized as an opportunity to focus interest on rural social problems. The processes in rural casework are not unlike those of the city, but the point of view may be very different. In the city social work is likely to be a triangle, with three corners occupied respectively by the contributors of money, the workers, and the clients. The people who support city social work ordinarily do not think of themselves as beneficiaries. In the country, the relationship is likely to take the form of a straight line, with the taxpayer at one end as both supporter and gainer, the social worker at the other. The worker and the work become a kind of service for which everyone pays and to which everyone is entitled, like that of the schools. The farmer thinks in terms of community work rather than casework, whatever the technique by which results are obtained. In fact, the farmer has one advantage over the city dweller in his capacity for community action, an art lost in the vastness and complexity of city life. No group of country people will go further or faster than the majority of the people both see and believe.

It seems clear that success in rural social work did not necessarily depend upon the worker's having been born and bred in the country. Far more important than the physical fact of origin is the psychical fact of present attitude toward country life. Hence there is little hope for the rural social worker if he is not imbued with and exhibits a genuine affection and enthusiasm for things rural.

A Federal Government official has recently affirmed that: "Conditions of farm life have made the farmer an individualist, slow to put faith in any organization. He is something

of a fatalist too, since so many chances that affect his success or failure are beyond human control. Yet there is much informal, individual help given to the unfortunates in rural communities as an act of neighborliness. It is the charitable organization developed in the city

that the farmer distrusts as not being adapted to rural life."

Certainly rural social work could never be a transplanting of city social work to rural neighborhoods. It must grow out of an understanding of the specific problems of people who live in rural environments.

SOCIAL HYGIENE

BY RAY H. EVERETT

EDITOR, *Journal of Social Hygiene*

SIGNIFICANCE

"Social hygiene carries with it for the advancement of mankind and for the development of human society far more than the mere control of the venereal diseases. It means better conduct and finer character and better organization of the community and of society. The Association has sounded the voice of authority in the many perplexing problems in this field," says Dr. William H. Welch, Honorary President of the American Social Hygiene Association.

Early Stages.—The earlier stages of the social hygiene movement were marked by the forming of several organizations, all having the same general purpose of bettering social conditions, but each of them seeing its own program as of particular importance. These undertakings might be grouped thus: first, those whose primary objective was to treat and cure the venereal diseases by medical measures; second, those who fought commercial prostitution by means of legal measures; and third, a group bent mainly on seeing wholesome, accurate, character-training education for all, and particularly for youth. In the early part of the century various members of this group began to think more and more in terms of a broader program which would include the best features of their individualistic efforts, and in 1914 the realization of the desirability and necessity for a farseeing, comprehensive program to meet the many and various problems which are inherent in this field resulted in the formation

of the American Social Hygiene Association.

ACTIVITIES

The following brief outline of the most important achievements in the field of social hygiene during 1927 gives a comprehensive idea of the progress that is being made.

Public Information.—During 1927 the work of stimulating and aiding the activities of local and state organizations dealing with social hygiene problems was carried forward. At the request of a local committee in a large city, home of a great university and many important industries, a comprehensive public health survey was made. The resulting reports will furnish not only a guide to that particular community but also a source book for other communities confronted with similar problems. A most important and interesting regional conference on social hygiene was held in Kansas City. The program brought into active participation schools, clubs, churches, civic bodies, social service organizations, the press—every kind of agency concerned in improving the quality of community life, and it brought together social workers and others from surrounding states, from California and New York, from Minnesota, Arkansas, and Kentucky.

The routine work of supplying pamphlets, exhibits and motion pictures for conferences in the fields of health education has been carried on in ever widening circles. Through the cooperation of the Bureau of Health Education of the New York

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Health and Tuberculosis Association several lectures covering the various fields of social hygiene work have been broadcast over the radio.

The *Journal of Social Hygiene* has published many new and notable contributions to the whole field of social hygiene from such authorities as Sir Arthur Newsholme, Paul Popenoe, Dr. Thomas Parran, Jr., Dr. William F. Snow, Elwood Street, C. E. Silcox, Thomas D. Eliot and Oscar Riddle.

EDUCATIONAL

General.—Since education is the basis of any constructive social movement, it has been the aim in the field of social hygiene to promote such character education and training from childhood as shall develop right attitudes, ideals, standards, and behavior in respect to sex in its broadest sense. Educational work is conducted with parents, teachers, religious leaders, social workers, nurses, industrial and professional groups, students, and the general public. To trained lecturers is largely entrusted the task of "putting over" the educational program.

In the past three years social hygiene committees in 202 representative universities and colleges have been studying the problems of sex-social education in the colleges, with a view to preparing suitable educational materials, and formulating a practical program for its inclusion in the curricula. The United States Public Health Service in cooperation with the American Social Hygiene Association is also studying the status of sex education in the high schools and elementary schools of the country.

The Social Hygiene Committee of the National Congress of Parents and Teachers is cooperating with the American Social Hygiene Association and the National Health Council in striving to promote among parents and teachers better understanding of principles and methods for training the young in high ideals concerning all human relationships.

Special Courses.—During the summer of 1927 a number of courses covering the field of social hygiene were offered. The Pennsylvania School of

Social Work in Philadelphia offered a Social Hygiene Institute. Lectures were given covering the history, development, and present program of the social hygiene movement. A Social Hygiene Institute was conducted at Chautauqua Assembly. A six weeks' course, accredited by New York University, was given on "Sex and Education," a study of their interrelating influences for the guidance of teachers and parents, and in addition a number of public forum lectures were given. Special lectures on sex education were included in two of the public health courses of the Normal School of the University of Michigan. And courses in social hygiene were conducted at Hampton Normal School and Agricultural Institute, Tuskegee Normal and Industrial Institute, and the State Normal Schools at Montgomery, Mobile, and Birmingham, Alabama.

LEGISLATION

Special legislative work was carried on in Alabama, Florida, Michigan, Georgia and New York during 1927 in aiding state and local groups in attempts to secure the revision of inadequate laws, or the enactment of new ones relating to social hygiene. In addition detailed studies of commercialized prostitution are being made in cities in the following states not mentioned above—Mississippi, Louisiana, Oklahoma, Texas, Utah, and Nevada. One of the most effective measures for closing houses of prostitution is the "Red Light" Injunction and Abatement Law, giving the citizen facilities for protection against these in case the prosecuting attorney does not act. The use of this and other laws against commercialized prostitution has resulted from the education of public opinion. This education has in large measure resulted from the gathering and distribution of facts showing the conditions which needed changing. The United States Public Health Service together with the United States Army and Navy has expressed approval of all surveys and legal measures in this direction because of the demonstrated relation between commercialized prostitution in these

cities and the incidence of venereal disease among the troops of neighboring posts.

MISSISSIPPI FLOOD

Protective.—At the request of the American Red Cross and the State Boards of Health in the Mississippi flood area the American Social Hygiene Association was glad to co-operate with them in relief work. Seven social hygiene workers were sent to the flood area and clearly demonstrated that social hygiene activities were both needed and wanted. Lectures, personal conferences, and general health talks were a part of the program. Refugees have shown sincere appreciation and have taken keen interest in the instruction given. With the discouraging problems of reconstruction before them, and many readjustments necessary to meet changed conditions, the communities in the flood area are bound to be an open field for social hygiene work for months to come. The trend of protective work today is toward clearing up and keeping clean the environment; toward the appropriation of more public funds for the prevention of delinquency rather than the use of these funds for salvaging projects.

MEDICAL

All agencies engaged in the campaign against venereal diseases have for one of their objects progressive reduction in prevalence of these diseases. Prolonging life by early and continuous treatment is equally important to those infected and to the public, but to accomplish this research is essential, and one of the most important functions of these agencies is to promote further study by institutions and groups possessing adequate equipment for carrying out the work. For the past two years a special committee of the American Medical Association has been studying the problem of research, diagnosis, and treatment of acute gonorrhea. The information obtained in these studies has been printed and distributed to physicians and selected

individuals, and considerable time and effort has been devoted to providing exhibits, literature, and speakers for the meetings of influential organizations.

An especially valuable piece of research work has recently been done in cooperation with the Medical Women's National Association in regard to pre-natal work in clinics. The annual meeting of the American Public Health Association in Cincinnati brought together a large group of state and city health officers and other interested sanitarians for discussion of common problems in regard to venereal disease control. Through the State Boards of Health in Tennessee and Montana there are being developed educational and preventive programs in venereal disease control.

INTERNATIONAL

The report of the Special Body of Experts appointed by the League of Nations to inquire into traffic in women and children was accepted by the Council in Geneva on March 9th. This special commission was appointed to secure a factual basis for future action, and its report is based chiefly on an investigation of the conditions existing in twenty-eight countries.

The report, which is in two parts, affirms the existence of international traffic in women and children, describes the main channels through which it operates and names the brothel as the pivot around which this traffic revolves, both in countries of "supply" and of "demand." The report as a whole was accepted by the Council, Part I, for immediate distribution to the public, and Part II for distribution to and consideration by governments before being made generally available to interested organizations and qualified persons. Statements in the public press and by competent authorities in many countries indicate that this valuable report will have great influence in stimulating further efforts of governments and voluntary agencies in combating this traffic.

MENTAL HYGIENE

BY GEORGE K. PRATT

NATIONAL COMMITTEE FOR MENTAL HYGIENE

BASIS

As the varied but coordinated aspects of mental hygiene continue to penetrate deeper into contemporary sociological, educational and psychologic practices, the wisdom of its insistence on an interpretive rather than a descriptive approach to the study of human conduct becomes apparent. In adhering to such a policy mental hygiene thus keeps in line with the scientific developments of its professional sister, psychiatry. The emergence of the study of mental disease from the era of belief in demoniacal possession, into that of its recognition as a sickness was followed by an attempt to classify its myriad manifestations. Until the past decade psychiatry had largely been under the influence of the Kraepelinian concept; a sterile and static concept content to describe and label.

Since the war, however, no other branch of medical science has developed so astoundingly as has psychiatry; largely, it is felt, because of its refusal longer to be satisfied merely with an observation and classification of the patient's symptoms. Instead, the great emphasis in psychiatry today is focused on an effort to understand what the patient's symptoms *mean*; what they are symbolic of, and what repressed or frustrated desires he is seeking to find an outlet for in the distorted guise of symptoms. No other adjunct in this effort to comprehend the motive underlying symptoms has been as helpful as that embraced in technical psychoanalysis.

This addition to the armament of the physician engaged in the practice of psychological medicine has made rapid strides in development in the past year, and numerous of its principles already have found adoption in the techniques used in child guidance clinics, general mental hygiene clinics and in private psychiatric practice. During the year just closed evidence is seen to support a belief that psychoanalysis,

despite a bitter emotional opposition not readily paralleled in the history of medicine since the discoveries of Pasteur, is here to stay. Gradually, however, has appeared on the scene, in America at least, a little nucleus of psychiatrists, closely identified with the mental hygiene movement, whose professional eminence, reputation and special training are alike unquestioned. In the hands of these persons the future of technical psychoanalysis may be safely reposed.

RELIGIOUS INTEREST

Connection.—The year 1927 saw the interpretive aspects of mental hygiene extended to a relatively new field; that of religion. Here too, certain forward-looking clergymen and one or two of the Protestant theological seminaries began to see behind special personality traits or displays of undesirable behavior, something more than deliberate lapses from standards of conventional morality. The explanation of such traits or behavior as reactions to biological or environmental factors has begun to intrigue the interest of these ecclesiastics and several conferences were held in 1927 between psychiatrists and clergymen in a joint attempt to ascertain if, or where, religion and mental hygiene might meet on common ground.

Healing.—Closely associated with the interpretive aspect of mental hygiene and religion is another concerning the activities of so-called "religious healing." Physicians, and especially psychiatrists, have long been skeptical about the proclaimed successes of "religious healing," particularly in the field of organic disease. In an effort partially to clarify the issues involved, but more specifically to ascertain the extent to which "religious healing" is practiced in metropolitan areas, as well as to observe its various modes of application, a sub-committee on Religious Healing was created by the Public

Health Committee of the New York Academy of Medicine. On this subcommittee were physicians and clergymen who in turn engaged a competent worker to undertake a study of the situation as it existed in New York City. The report of this Committee was published in the Journal of the American Medical Association.

Its significance lay primarily in the facts it disclosed with regard to the prevalence of "religious healing" and the unexpectedly large numbers of persons resorting to it, in many instances as protests against their failure to obtain relief from uncomfortable symptoms at the hands of general practitioners of orthodox medicine, who failed to perceive the emotional nature of the patient's difficulties.

Difficulties.—This report likewise called attention to the dangers to the layman in relying on "religious healing" in the case of infectious illnesses, or in the early stages of malignant disease where prompt medical treatment might be expected to avert a fatal termination. Many prominent psychiatrists feel there is a field of usefulness for properly safeguarded "religious healing" in the treatment of certain psycho-neurotic conditions where the patient's symptoms are but objective evidences of a mental conflict. They also feel, however, that in all but a negligible number of instances, each patient should be given a thorough physical examination to eliminate the question of organic disease before submitting to the "religious healing" process and that the clergyman who utilizes "healing" methods be trained and familiar with the rudiments, at least, of modern, dynamic psychology in its clinical aspects.

SERVICE IN EDUCATION

During 1927 the mental hygiene movement continued its development of work with unadjusted college students begun in 1926. The experiment at Yale University in the mental hygiene of college men (made possible by a grant from the Commonwealth Fund) has been enlarged, and five psychiatrists on either full or part-

time service now constitute its medical staff. In addition a specially trained psychiatric social worker has been engaged to assist the psychiatrists. Dr. Harry N. Kerns, one of the staff of the mental hygiene department at Yale University classified the various conditions encountered during the year at that university as follows:

Frank mental disorders	45%
Scholastic difficulties	25%
Sex problems	15%
Personality problems	15%

In addition he calls attention to the fact that 20% of all the problems seen last year by the staff have been essentially mental depressions, throwing possible light on the many "student suicides" recorded in the daily press throughout the country in the early months of 1927.

At the present time some fourteen colleges and universities in America have availed themselves of the services of part or full-time psychiatrists. Supplementing this number are several prominent preparatory schools and military academies that likewise have secured psychiatric assistance in their attempts to solve student maladjustments in a scientific and wholesome manner.

But collegiate mental hygiene is not as simple as some would have it appear. Moreover it is not without a distinct element of danger, if improperly applied. A mental hygiene service in a college calls for far wider and a more specialized knowledge of psychiatry than is found in most lay psychologists or others working in Vocational guidance, Personnel and allied fields. Because of this several prominent colleges have been discouraged the past year from attempting to establish such departments until adequately trained personnel is available.

TRAINING

Essential.—As in every other field of clinical psychiatry there is a great shortage of properly trained specialists for this work and the National Committee for Mental Hygiene (which initiated and developed the field of collegiate mental hygiene) advocates strongly against the prema-

ture or ill-advised establishment of mental hygiene departments until the college as a whole is ready for it, and until a well-trained staff is in sight.

The question of sufficient trained personnel in every field of clinical mental hygiene has this year assumed grave proportions. Many communities, having been "sold" to the need and usefulness of child guidance clinics, school clinics and similar mediums for applying mental hygiene principles now desire to establish such clinics, but cannot in view of the shortage of trained workers.

Fellowships.—To partially increase the numbers of such trained persons, several organizations have taken the lead in offering fellowships to candidates possessing the required background and personality qualifications. The Rockefeller Foundation and the Commonwealth Fund individually have allocated to the National Committee for Mental Hygiene funds for the granting of fellowships in extramural psychiatry. These fellowships are administered by the National Committee for Mental Hygiene and are designed to provide special training for physicians who have had previous hospital training in psychiatry but who wish to prepare for extramural work in child guidance, delinquency, education, dependency and industry.

Relations with Colleges.—Additional fellowships in psychiatric social work have been made available, some of which are administered by the National Committee for Mental Hygiene, while others are offered directly by certain schools of social work, the most prominent of which are the New York School of Social Work and the Smith College School of Social Work. At each of these arrangements have been made with the Commonwealth Fund to assign a considerable number of students for field training at the Child Guidance Institute in New York City. Several attempts were made the past year to bring before members of the Senior classes in certain colleges and medical schools the possibilities such work offers as life careers for those who are educationally and temperamentally fitted to engage in it.

RELATION WITH CRIME

Criminals.—A marked accession of interest on the part of the general public and various local crime commissions in particular has become evident in questions pertaining to the psychopathology of crime. The mental (psychiatric) examination of prisoners is being more and more regarded by thinking citizens as a sensible procedure that should be given wider adoption and at the annual meeting of the National Crime Commission in Washington in November, 1927, an entire session was devoted to the presentation of papers and discussion concerning this subject. Here it was brought out by a consensus of psychiatric authority that some form of mental disease or defect undeniably is found in a goodly percentage of prisoners, and especially in recidivists or "repeaters."

Examination.—At this meeting it was urged that the substance of the law operative in Massachusetts, providing for the mandatory psychiatric examination of prisoners charged with certain offenses, be introduced into the legal codes of other states with appropriate local modifications. This Massachusetts law (now in its third year of operation) provides for the mental examination *before trial*, of all persons charged with a capital offense; or who previously had been indicted for a felony; the technical examination to be conducted under the auspices of the State Department of Mental Diseases and copies of the psychiatric report to be made available, both to the counsel of the prosecution as well as to that of the defense.

At its Annual Meeting in June, 1927, the American Psychiatric Association officially adopted the report of its Legal Committee which had been studying problems connected with the psychopathology of crime for several years. This legal committee recommended that the American Psychiatric Association should advocate:

PLATFORM

1. Types of legislation such as the recent Massachusetts enactment and the expert testimony bill of the American Institute for Criminal Law which put the psychia-

HOUSING PROBLEMS

trist in a position of counselling the legal authorities as to the disposal of social offenders, implying the development of the necessary machinery (clinics, court psychiatrists, etc.).

2. The following proposals of The American Institute for Criminal Law and Criminology with respect to trial procedure:

- (a) "That the disposition and treatment (including punishment) of all misdemeanants and felons, i.e., the sentence imposed, be based upon a study of the individual offender by properly qualified and impartial experts co-operating with the Courts."

- (b) "That no maximum term be set to any sentence."

3. The release of prisoners upon parol or discharge only after complete and competent psychiatric examination with findings favorable for successful rehabilitation, to which end the desirability of resident psychiatrists in all penal institutions is obvious.

4. The permanent legal detention of the incurably inadequate, incompetent, and anti-social offenders irrespective of the particular offense committed, and the development of the assets of this permanently custodial group to the point of maximum usefulness within the prison milieu, industrializing those amenable to supervised employment, and applying their legitimate earnings to the reimbursement of the state for their care and maintenance, to the support of their dependent relatives, and to the reimbursement of the persons injured by their criminal activities.

5. The Court appointment from a qualified list, of the psychiatrists testifying in regard to the mental status, mechanisms or

capabilities of a prisoner, with opportunity for thorough psychiatric examination using such aids as psychiatrists customarily use in practice, clinics, hospitals, etc., with obligatory written reports and remuneration from public funds.

6. The elimination of the use of the hypothetical question and the terms, "insane" and "insanity," and "lunacy," and the exemption of the psychiatrist from the necessity of pronouncing upon concepts of religious and legal tradition in which he has no authority or experience, such as "responsibility," "punishment," and "justice."
7. The teaching of courses in criminology in both law schools and medical schools by persons trained in both criminal law and criminal psychiatry.

The numbers of trained psychiatric social workers is greatly increasing. The graduate schools of social work are turning out about sixty workers trained in psychiatric social work per year. The American Association of Psychiatric Social Workers has a total membership of 175 (165 active and ten junior members). This association is concerned chiefly with the maintenance of standards. Its qualifications for membership are an A.B. degree, graduation from a recognized school of social work, with one or two years additional experience in a position in psychiatric social work.

HOUSING PROBLEMS

BY GEORGE GOVE

SECRETARY, NEW YORK STATE HOUSING BOARD

SHORTAGE OVERTAKEN

Those changes that, in 1926, had indicated a progressive disappearance of maladjustments caused by a shortage of housing in the United States became more marked in 1927. Although total construction for the past year approximated the enormous volume of 1926, a further decrease in residential building continued the decline of the previous year. This decline, in contrast to an increase in the total for all other classes, is additional evidence that the housing shortage has been overtaken by the vast volume of construction since 1921.

In New York City, the favorable trends of 1926 were strengthened in

1927, as disclosed in a survey by the New York State Board of Housing. The vacancy average reached almost the pre-War standard; mobility became pronounced, indicating a return of the tenants' bargaining power; and market rents not only halted in their advance, but began to decline.

RENTS

Lower Average.—Average rents throughout the United States continued to move downward during 1927, decreasing about 3 per cent, according to compilations of the National Industrial Conference Board. An accompanying increase in vacancies, as in New York City, restored to tenants their freedom to bargain,

and brought a certain amount of relief from the pressure of the rental group above, as shown in growing turnover and mobility.

Rent Control.—Emergency control of rents, which had, by 1926, been abandoned for all cities except a few in New York State, was restricted in 1927 to only New York City and Buffalo and further modified to apply only to dwellings and apartments renting at less than \$15 per room per month in New York City and \$7 in Buffalo.

Underlying Conditions.—The approach to a normal status leaves unaltered the fundamental problem of properly housing those who, through two generations, have lacked adequate dwellings even in normal times. In its report of March, 1927, the New York State Board of Housing said, "Construction on Manhattan providing new apartments to rent at \$15 a room and less is negligible. However, the table does indicate a definite tendency toward construction for lower rent groups. The average rent charged for new apartments in 1926 was considerably below that charged in either 1924 or 1925, and over 16 per cent of the new apartments were offered at rents under . . . \$20." Two-thirds of the families in New York City have annual incomes of less than \$2,500 and cannot pay more than \$12.50 per room per month. Commercial builders do not supply adequate housing at that rental.

The most marked maladjustment and the greatest shortage of dwellings in New York City were found to exist at rents between \$8 and \$15 per room per month. Pressure from rental groups above and below emphasized the shortage. Below \$8 there was an apparent over-supply of sub-standard housing comprised chiefly of old, outlawed, unsanitary tenements that are being abandoned as families become able to choose some alternative.

PUBLIC INITIATIVE

New York Tax Exemption.—Since construction for profit does not provide low rental dwellings, any progress in public initiative expressed through state or municipal legisla-

tion is especially significant. New York City, in the summer of 1927, exempted from taxation for twenty years the land used for dwellings erected under the State Housing Law. That law authorizes the organizing of limited dividend companies which may issue stock to attract private capital for erection of model tenements. Interest on the stock is limited to 6 per cent. Power of condemnation is granted for projects approved by the administering body, the State Board of Housing.

Model Tenements.—A large, model tenement approved by the Board was completed in New York City during 1927, and four others were in the stage of active planning. The completed project contains 1,185 rooms housing 1,200 or more persons. Meeting the highest standards, apartments rent at \$11 per room per month. Rooms are large and equipment complete, while the buildings—excellently located as to surroundings, light and air—occupy only 49 per cent of the ground area.

New York City obtained authority in the State Fall election to lease for housing purposes, and for terms of ninety-nine years, such land as the City may acquire by excess condemnation in street widening and other public improvements. Reconstruction of eight city blocks was mapped as an initial undertaking. In Chicago, the Housing Commission appointed by former Mayor Dever planned a group of model tenements for Negroes.

OTHER DEVELOPMENTS

Cooperative enterprise resulted in important achievements. The United Workers' Co-operative Association and the Jewish National Workers' Alliance both completed large projects of high type and low cost in New York City. Another cooperative venture was completed in the same city with the support of John D. Rockefeller, Jr. Model tenements of semi-philanthropic character were constructed in New York City by the Lavanburg Foundation.

Regional Cities.—Mariemont, a regional city near Cincinnati, is now developed to house several hundred

families. Sunnyside, a limited dividend housing project within the City of New York, is now completed with accommodations for about 3,000 persons. Kingsport, Tenn., an industrial project comparable with English Garden Villages, entered its fourth year with a population grown to 10,000.

Tenement Regulation.—Most important in the field of regulation was Governor Smith's appointment in New York of a Commission to redraft the Tenement House Law which, when it was enacted twenty-six years ago, established the highest standards then attainable for multi-family

dwellings. In Cincinnati, more than 113 buildings found unsafe or unfit for habitation were condemned or vacated, and hundreds of others were repaired. The unique Octavia Hill Association completed, financially sound, its thirtieth year of extended activities in Philadelphia.

Zoning.—Housing has benefitted in the past year by continued extension of regional and city planning and by adoption of zoning ordinances in many cities, towns and villages. The most important planning event of the year was the decision of the United States Supreme Court in favor of reasonable zoning.

CHILD WELFARE

By C. C. CARSTENS

EXECUTIVE DIRECTOR, CHILD WELFARE LEAGUE OF AMERICA

LEGISLATION

Pending Measures.—Forty-four legislatures were in regular session in 1927 and one state, Virginia, held a special session. This left only Kentucky, Louisiana and Mississippi where no legislatures met. Many projects for the further development of child welfare work came up for consideration. On the whole, the sum total of legislation in the number of statutes passed was not as extensive as in recent years.

New State Laws.—Florida by legislative act established a new Department of Public Welfare including a specific Children's Bureau as an important division. Alabama provided a much increased budget for its Child Welfare Commission, and California, Pennsylvania, South Carolina and Virginia saw important changes in the organization of personnel of their state welfare departments.

State Amendments.—Although some twoscore bills to raise the standards of the child labor, education and compensation laws were introduced in the forty-four legislatures in 1927, only a very meager number of actual gains were made. Probably the most striking are the amendments to the workmen's compensation laws

of Illinois, Maryland, and Michigan, providing for additional compensation in case of injury to minors illegally employed. In Illinois, under the statute which came into force July 1 illegally employed children are now entitled to benefits under the regular Workmen's Compensation Act and will receive compensation amounting to one and one-half times the amount paid to those legally employed.

Standards of Child Employment.—Another outstanding event was the issuing of a statement of standards by the Committee on Junior Education and Employment of the National Association of Manufacturers, long considered one of the chief antagonists of child labor legislation. This program for employed children of fourteen and fifteen years of age includes:

1. An employment certificate issued under state authority for each job applied for under a different employer;
2. physical examination by physicians designated by the state, and a certificate that the individual is physically fit to enter the employment applied for;
3. completion of the sixth grade after allowing two years for adjustment after the passage of the statute with proper provisions for vacation permits;
4. requirement of a minimum of four hours a week of continued education, either in continuation schools or under shop plans approved by properly constituted state authority which should have

the power to release individuals incapable of further education or to excuse any child until proper continuation schools have been established; 5. limiting of the hours of labor of all children under 16 years employed in manufacturing, mining, transportation or commercial occupation, of not to exceed 48 hours per week with prohibition of night work before 7 A.M. or after 9 P.M.; 6. strengthening of laws forbidding the employment of children in hazardous occupations by more carefully defining the specific hazard.

Only six states (Illinois, Iowa, New York, Ohio, Oregon and Wisconsin) now completely meet the five standards advocated by the Manufacturers Association. There are states, however, whose standards in respect to educational requirements, daily hours and night work are already ahead of these pronouncements.

Another bill worthy of note is the one passed in Maine, namely, a law which raises the educational requirement for work certificates from the 6th to the 8th grade.

The Child Labor Amendment was ratified by Montana, thus bringing up to five the number of states which have ratified since its passage by Congress in 1924.

WELFARE WORK

Child Health.—In the field of child health an analysis of the infant mortality statistics of 1926 became available. In the records of 613 of the 644 cities of 10,000 or more population included in the birth registration area the rate was 73.7 as compared with 72.6 for 632 cities in 1925. Portland, Oregon, with a rate of 39, Seattle with 47, and San Francisco with 50 led the cities of more than 250,000 population. The admission of Arkansas and Idaho to the birth registration area has been announced.

Marriage.—Pennsylvania passed a law raising the minimum age of marriage to sixteen years for both parties. New York now requires the clerk issuing a marriage license to require documentary proof of age of persons under twenty-one and the consent of both parents for girls 14 to 18 and for boys 16 to 21. California passed a measure requiring the posting of a notice of intention to marry at least ten days and not more than thirty days previous to the application for a license.

Mother and Children Aid.—Pennsylvania and Washington repealed laws providing for the indenturing of minors. Changes in the law relating to public aid for mothers and children in their own homes occurred in a number of states, among them North Carolina and Pennsylvania, which provided more liberal state appropriations. New York and Oregon broadened the scope of their legal provision dealing with the same subject.

All but three states are now co-operating with the United States Children's Bureau under the terms of the Maternity and Infancy Act, Kansas and Maine having accepted the conditions during the year.

Conference on Church Work for Dependent and Neglected Children.—This first conference was held in New York under the auspices of the Federal Council of Churches and the Child Welfare League of America. Nineteen states and twelve of the largest Protestant church bodies were represented.

Welfare Activities Grouped.—In New York City the Welfare Council has organized a children's group, linking together for the first time the manifold child welfare activities of the metropolis, and an Institute for Child Guidance was opened July 1 under the auspices of The Commonwealth Fund.

In October the International Institute for the Protection of Childhood was opened in Montevideo for service to all nations of the Western Continent, and in December the Pan-American Congress on Child Welfare, held in Havana, was attended by an official delegation from the United States.

COURTS

Judge Bartelme.—In the field of delinquency and juvenile courts Judge Mary M. Bartelme, formerly Referee of the Juvenile Court of Cook County, Chicago, was appointed to the Judgeship, and two referees were added to the staff of the Court, and Judge Ben B. Lindsey was eliminated by a decision of the Supreme Court of Colorado from the Denver Juvenile Court.

Domestic Relations.—Two additional Domestic Relations Courts were established in Franklin County and Stark County, Ohio.

Probation Officers.—The United States Department of Justice authorized the appointment of ten probation officers, among whose duties would be the supervision of juveniles, and the first probation officers appointed under the new Federal statute have begun work in connection with the United States District Courts in the southern district of New York, the District of Massachusetts, and the Eastern District of West Virginia.

MORTALITY AND DISEASE

Suicides.—Statistics were presented by the Metropolitan Life Insurance Company regarding suicides among their 2,000,000 youthful policy holders. The figures for boys for 1926 was 3.9 per 100,000, comparing with 6.7 in 1911; and the figure for girls 3.4, compared to 10.1 in 1911.

Blindness.—One out of every ten children admitted to Schools for the Blind in the United States was found to be there as a result of infection acquired at the time of birth, compared with one out of three children twenty-five years ago.

CHILD LABOR

By WILEY H. SWIFT

ACTING GENERAL SECRETARY, NATIONAL CHILD LABOR COMMITTEE

Proposed Constitutional Amendment.—During 1927, the ratification of the Federal child labor amendment was considered in 13 states. One state, Montana, ratified it in both houses; Nevada ratified in the House but rejected in the Senate; and in the remaining states it was either rejected, or no action taken. This leaves the total number of states having ratified five—Arkansas, Arizona, California, Montana and Wisconsin. Ratification by 36 states is necessary for the amendment to become law.

State Legislation.—Bills to amend the child labor and compulsory school attendance laws were introduced in 28 states during 1927. These included bills to strengthen the present laws, and also bills which would lower present standards. The gain was on the whole slight, except in the field of extra compensation for minors injured while illegally employed. A few bills weakening the law were also passed.

In Connecticut, a bill was passed forbidding the employment of minors under 16 years of age in mercantile establishments after 6 p. m. on more than one day a week (except from December 17 to 25) and also forbidding their employment at any time after 10 p. m. Formerly the second provision applied only to females.

Another bill became law which permits children 14 to 16 years of age in good physical condition to be employed outside of school hours. Formerly this was permitted only during the summer vacation. In Illinois, the Workmen's Compensation Law was amended, being broadened to provide an increase of fifty per cent in the amount of compensation awarded to an employee under sixteen years of age who is injured while illegally employed.

In Maine, the educational requirement for a work permit was raised from the 6th to the 8th grade. On the other hand, the law was weakened by permitting children of 14 years of subnormal mentality to leave school for work. Other changes in the Maine law added bowling alleys and pool rooms to the prohibited places of employment for minors under 14 years of age (formerly this applied only during school hours), set a 16-year age limit for an usher, or attendant in a theatre or moving picture house, and for operator of an elevator in a hotel, lodging house, or apartment house. Before the passage of the bill, there was a 15-year age limit for operating elevators, and an 18-year limit for operators on rapidly moving elevators; this latter provision has been lowered to 16. In

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Maryland, a law was passed providing that double compensation be awarded in cases of injury or death to illegally employed minors.

In Michigan, a bill was also passed to provide double compensation for minors 16 to 18 years of age, in case of injury or death while illegally employed. The Michigan law restricting the hours of work for children under 16 years to 10 hours a day, 54 hours a week was weakened by adding to the existing exemption of children engaged in preserving perishable goods in fruit and vegetable canning establishments, those engaged in "shipping" goods in fruit and vegetable canning and "packing" establishments.

In Minnesota, an amendment to the law prohibiting enumerated dangerous occupations for persons under 16, omits from the list of prohibited occupations, "employment in any capacity in the manufacturing of paints, colors or white lead;" it also specifies certain types of acrobatic performances to be prohibited for persons under 18, but an amendment to the bill exempts from the application of the law, a child under 10 years of age as a singer, dancer, musician or actor on a permit from the Industrial Commissioner. Formerly children over 10 were allowed to engage in theatrical work on a permit.

In North Carolina, according to the official opinion of Attorney General Dennis G. Brummit, the bill which passed this session of the legislature prescribes an 8-hour day, 48-hour week for minors under 16 who have not completed the 4th grade; those who have completed the 4th grade may work as formerly, 11 hours a day, 60 hours a week. This bill also forbids the employment of children under 16 years after 7 p. m.; formerly work till 9 p. m. was legal. In West Virginia, the proof of age requirement in the work certificate law was weakened in that affidavit of a parent is accepted as a first proof

of age on an equal basis with a birth certificate or transcript thereof.

Program of the National Association of Manufacturers.—One of the most important events in the child labor field during 1927 was the publication by the National Association of Manufacturers, long regarded as one of the chief antagonists of child labor legislation, of a Program for the Protection of Employed Children 14 and 15 Years of Age. This Program advocates:

1. An employment certificate issued under state authority for each job applied for under a different employer.
2. A physical examination by physicians designated by the State, and a certificate that the individual is physically fit to enter the employment applied for.
3. The completion of the sixth grade, after allowing two years for adjustment after the passage of the statute in states not already having an educational qualification, with proper provision for vacation permits.
4. The requirement of a minimum of four hours a week of continued education, either in continuation schools or under shop plans approved by properly constituted state authority which should have the power to release individuals incapable of further education or to excuse any child until proper continuation schools have been established.
5. The limiting of the hours of labor of all children under sixteen years, employed in manufacturing, mining, transportation or commercial occupations, of not to exceed forty-eight hours per week, with a prohibition of night work before 7 a. m. or after 9 p. m.
6. The strengthening of laws forbidding the employment of children in hazardous occupations by more carefully defining the specific hazards.

In some respects this Program is good; in other respects it falls below the standards generally accepted as desirable and already established in many states. Its chief weaknesses are: (1) The educational requirement is too low. (2) The regulation of hours does not specify an 8-hour day and 6-day week. (3) Mining should not be included, as all important mining states already prohibit children under 16 from working in mines. (4) Night work should not be permitted after 7 p. m.

SOCIALISM

BY ALGERNON LEE

EDUCATIONAL DIRECTOR, RAND SCHOOL OF SOCIAL SCIENCE, NEW YORK

GENERAL PROGRESS

Impending Elections.—The year 1927 was less marked by startling events in the field of Socialism than by slow and steady progress of the movement in almost all parts of the civilized world, and by preparation for the great electoral struggles which are to take place in 1928 and 1929 in France, Germany, Great Britain, Japan, and several smaller countries, as well as in the United States.

Party Condition and Membership.—The Socialist party in the United States continued its gradual recovery from the apparently desperate condition to which it had been reduced by the after-effects of the war and by the internal dissensions which culminated in the formation of the bitterly hostile Worker's (Communist) party. The party membership increased during the year; branches were formed in many localities where none had existed in recent years; the party press gained many additional readers; and some victories were won at the polls.

1927 Elections.—In the spring a Socialist was elected as mayor of Granite City, Illinois. In November a Socialist was elected to the city commission of Buffalo, N. Y., and the party carried the important industrial city of Reading, Penn. Throughout the State of New York, and in some other parts of the country where off-year elections were held, the Socialist vote was substantially increased, and in New York City the party failed by only a narrow margin of re-electing Judge Jacob Panken, who had been carried in for a ten-year term by the high tide of 1917.

SOCIALIST ACTIVITIES

Sacco-Vanzetti Case.—Through the greater part of the year the party devoted much of its energies to the widespread agitation for a new trial or, failing that, for executive clemency in the case of Sacco and Vanzetti, who in the opinion of many

besides the Socialists, had not been proved guilty of the crime for which they were sentenced, but were being victimized for their activity as labor-radicals. The movement did not save them from execution, but it had a profound effect on public opinion.

Carillo and Greco.—Better success attended the defense of Carillo and Greco, the Anti-Fascisti, accused of murder in New York, in which likewise the Socialists took an active part. Their triumphant acquittal, with the exposure of the false evidence brought against them, did much to enlighten the public about Fascism.

Strikes.—Socialist organizations were active in getting material as well as moral support for the striking textile workers in Passaic, N. J., and for striking coal miners in Pennsylvania, West Virginia, Ohio and Colorado.

Foreign Intervention Protest.—The National Executive of the party and its branches throughout the country vigorously protested against armed intervention in China and in Nicaragua, both of which actions it denounced, not only as violations of the sovereignty of those two nations, but as involving the sacrifice of American, Nicaraguan, and Chinese lives in the interest of American financiers.

Congressman Berger.—In all these activities Victor L. Berger of Wisconsin, the only Socialist in Congress, took an active part. Congressman Berger opposed the tax-reduction bills, holding that they favored rich individuals and corporations and gave no relief to the less wealthy classes. When the McNary-Haugen farm relief bill came up for a second time, he voted for it, expressing regret that no more satisfactory measure for the benefit of the working farmer had a chance of consideration.

FOREIGN ACTIVITIES

Visitors to U. S.—Among the distinguished foreign Socialists who

visited the United States during the year were Margaret Bondfield, J. Ramsey MacDonald, and Bertrand Russell of Great Britain; Tony Sender of Germany, Gactano Salvemini of Italy, and Ludwig Gelehrter of Rumania.

Argentine Elections.—Municipal elections in Argentina gave the Socialists control of another city, in addition to five which they already held. In conjunction with the Federation of Labor, they waged a campaign in favor of a minimum-wage law for agricultural laborers and division of the enormous landed estates which still exist in the interior.

Australia.—The Australian state of Victoria held an election which made the Labor party the strongest group in the legislature, with 28 seats out of a total of 65.

Austria.—The Austrian Socialists made large gains in the general election, polling 42 per cent of the total vote and winning three additional seats in parliament, where they now have 71 out of 165. The Socialist city administration of Vienna continued the development of its practical program, among other things completing municipally owned dwellings for several thousand families and establishing great municipal bath-houses.

For a few days in July the eyes of the world were centered on Vienna. Early in the year two Socialists had been brutally murdered by reactionary rioters of the Fascist type. The acquittal of the murderers by judges who were known to be hostile to labor and to the republic provoked widespread indignation, which showed itself in spontaneous mass demonstrations. The government gendarmerie, by firing into the crowds and killing 57 men and women, turned the demonstration into a furious riot, which for a day or two threatened wholesale destruction. The national government, alarmed at the consequences of its own ruthless action, had to appeal to the Socialist and Trade Union executives to save the situation. Co-operating with the city administration, and having the confidence of the masses, they soon restored order, and have since been pressing for pun-

ishment of those who caused the bloodshed.

Belgium.—Toward the end of the year the Belgian Socialists withdrew from coalition with the Liberals and a new ministry was formed, with the Socialist or Labor party in parliamentary opposition.

Canada.—Legislative elections in the Canadian province of Manitoba gave three seats to the Labor party.

Scandinavia.—In Denmark the upper house of parliament defeated the bill, introduced in 1926 by the Socialist Premier Stauning and passed by the lower house, which would have reduced the nation's military and naval expenditures to less than one-third their present amount. The Norwegian Labor party and the Social Democratic party united, under the latter name, with 33 of the 100 seats in the Storting. Swedish Socialism met a slight setback, losing two seats to the Communists in the Stockholm municipal election.

Finland had a general election in June, which made the Socialists the largest single party in the district with 60 members out of 186. A Socialist ministry was formed, which lasted till December. It carried through an amnesty to political offenders, a law shortening the term of military service, and appropriations for useful public works to relieve unemployment. It resigned when the Diet rejected a bill cutting down the taxes on food.

France.—The French Socialists increased their representation in the senate from six to 14. The party agitated for withdrawal of French troops from the Rhineland.

Germany.—State and city elections in Germany brought considerable gains to the Social Democratic party. On the other hand, in the Diet of Saxony, when a deadlock took place with 35 Social Democrats and 14 Communists against 49 of all the bourgeois parties, the desertion of four Socialists made possible the formation of a bourgeois ministry.

England.—The British Labor party won a parliamentary bye-election at Stourbridge—its sixth victory since the general election. This was offset by the loss of a seat when Haden

Guest deserted the party on the issue of intervention in China. The municipal elections in November resulted in a net gain of 128 seats for Labor, and gave the party a majority in the councils of 16 cities, instead of nine as before.

Besides vigorously opposing the dispatch of armed forces to China, the Labor party made a strenuous fight against the new trade-union bill introduced by the government. It succeeded in forcing several important amendments, which made the measure somewhat less dangerous; but in view of the abnormal Tory majority in parliament the passage of the measure was a foregone conclusion.

Holland.—The Social Democratic Labor party, cooperating with the Trade Union Federation, carried on a strong campaign for the reduction of the military and naval budgets, and also against the oppression of the natives and persecution of labor organizers in the Dutch East Indies. The party holds 24 out of the 100 seats in parliament. The Socialists of Iceland won majorities in all but two of the local councils of the island.

Ireland.—The general election in June increased the parliamentary group of the Labor party from 15 to 22, in a total of 149. To escape from a deadlock between the two largest parties, however, the government called for new elections, as a result of which the Labor delegation was cut down to 13.

Japan.—The enactment of a manhood-suffrage law in Japan, with the prospect of a general election in 1928, stimulated the activity of the Socialist and Labor elements. Their division into four parties, however, greatly diminishes their effective strength.

Latvia.—Latvia began the year 1927 with a Socialist Liberal coalition government, formed as a result of the former bourgeois-agrarian ministry, breaking its pledge to extend citizenship rights to the Jews. The Socialists have 35 seats out of 100 in the parliament.

Rumania.—The Rumanian Government issued a decree forbidding the Socialist party to hold a national

convention. So strong was the protest of the working people, however, that the government revoked its order. The party is gaining strength, despite the arbitrary régime that prevails in that country.

South Africa.—The South African Labor party and the South African Trade Union Congress—both of them composed wholly, or almost wholly of whites—successfully opposed the Government's demand for legislation to prevent the organization of negro working men. The Industrial and Commercial Workers' Union of South Africa, a negro organization with 42,000 members, was admitted to the International Federation of Trade Unions.

Spain.—Spanish Socialists refused the seats offered to them in Dictator Rivera's hand-picked "national assembly" and maintain their outright opposition to the dictatorship.

Hungary, Italy, Russia.—In Hungary under Horthy, in Italy under Fascism, and in Russia under the Communist Soviets, Socialist activity is still drastically suppressed. Most of the Socialist leaders of these countries are either in prison or in exile, while many have been executed or murdered. There were indications toward the end of the year, however, that at least in Italy the Socialist and Labor propaganda is being carried on with somewhat increased success through underground channels.

MANIFESTOS AND MEETINGS

The Labor and Socialist International, in its May Day manifesto, raised a warning against four great dangers to the world's peace—the imperialist aggressions of Great Britain, Japan, and the United States in China, the similar aggressions of the United States in Latin-America, the dictatorships of Eastern and Southern Europe, and the Italo-Hungarian intrigues which threaten war in the Balkan Peninsula. The executive chose Brussels as the place, and September 11-18, 1928, as the time, for the next Socialist International Congress.

Programs.—Among important international gatherings in 1927 were the congress of the Pan-American

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Federation of Labor, at Washington, which plainly though courteously expressed discontent with the action of the United States in Haiti and in Nicaragua; a conference at Stockholm of the labor federations of Sweden, Norway, Denmark, Finland, Latvia, Lithuania, and Esthonia, to plan mutual cooperation; the Leipzig conference of Socialist and Labor sport and athletic societies of Austria, Belgium, Czechoslovakia, Finland, France, Germany, Latvia, and Switzerland, which made plans for the second Labor Olympiad, to be held in 1932; and the congress of the Socialist Youth International, which met in Denmark, with delegates from eleven countries, and in conjunction with committees of the Labor and Socialist International and of the International Federation of Trade Unions, worked out a program of concerted action for combatting child labor, developing school facilities and promoting obligatory school attendance, and obtaining uniform legislation for the protection of apprentices and juvenile workers in factories and business establishments.

COGNATE SOCIETIES

JUSTICE AND MAINTENANCE OF ORDER

AMERICAN BAR ASSOCIATION.—Section on Criminal Law, Endicott Bldg., St. Paul, Minn.
 AMERICAN PRISON ASSOCIATION.—135 E. 15th St., New York, N. Y.
 AMERICAN CIVIL LIBERTIES UNION.—100 Fifth Ave., New York, N. Y.
 AMERICAN INSTITUTE OF CRIMINAL LAW AND CRIMINOLOGY.—357 East Chicago Ave., Chicago, Ill.
 AMERICAN LAW INSTITUTE.—3400 Chestnut St., Philadelphia, Pa.
 NATIONAL COMMITTEE ON PRISONS AND PRISON LABOR.—21 W. 57th St., New York, N. Y.
 NATIONAL CRIME COMMISSION.—120 Broadway, New York, N. Y.
 NATIONAL POLICE CONFERENCE.—240 Centre St., New York, N. Y.
 NATIONAL PROBATION ASSOCIATION, INC.—370 Seventh Ave., New York, N. Y.
 SOCIETY FOR THE PREVENTION OF CRIME.—1819 Broadway, New York, N. Y.
 WOMEN'S PRISON ASSOCIATION.—110 Second Ave., New York, N. Y.

SOCIAL ORGANIZATIONS

AMERICAN ACADEMY OF POLITICAL AND SOCIAL SCIENCE.—University of Pa., Philadelphia, Pa.
 AMERICAN NATIONAL RED CROSS.—17th and D. Streets, N. W., Washington, D. C.
 AMERICAN SEAMEN'S FRIEND SOCIETY.—76 Wall St., New York, N. Y.

AMERICAN SOCIETY FOR THE PREVENTION OF CRUELTY TO ANIMALS.—50 Madison Ave., New York, N. Y.
 AMERICAN SOCIETY FOR THRIFT.—9 East 46th St., New York, N. Y.
 BOY SCOUTS OF AMERICA.—200 Fifth Avenue, New York, N. Y.
 CIVIC FORUM.—123 W. 43rd St., New York, N. Y.
 BOYS' CLUB FEDERATION.—3037 Grand Central Terminal, New York, N. Y.
 BOY SCOUTS OF AMERICA.—200 Fifth Ave., New York, N. Y.
 CHILDREN'S AID SOCIETY.—105 E. 22nd St., New York, N. Y.
 GIRLS FRIENDLY SOCIETY IN AMERICA.—15 E. 40th St., New York, N. Y.
 GIRLS SERVICE LEAGUE OF AMERICA.—138 E. 19th St., New York, N. Y.
 HUMANITARIAN LEAGUE, INC.—131 W. 74th St., New York, N. Y.
 HUMAN PROGRESS ASSOCIATION.—220 W. 42nd St., New York, N. Y.
 INTERCOLLEGIATE SOCIALIST SOCIETY.—70 Fifth Ave., New York, N. Y.
 NATIONAL CATHOLIC WELFARE CONFERENCE.—132 Massachusetts Ave., N. W., Washington, D. C.
 NATIONAL CONFERENCE OF SOCIAL WORK.—25 E. 9th St., New York, N. Y.
 NATIONAL INSTITUTE OF SOCIAL SCIENCES.—280 Madison Ave., New York, N. Y.
 NATIONAL CONFERENCE FOR THE SOCIAL STUDIES.—671 Park Ave., New York, N. Y.

COGNATE SOCIETIES

YOUNG MEN'S CHRISTIAN ASSOCIATION, INTERNATIONAL COMMITTEE.—347 Madison Ave., New York, N. Y.

SOCIAL FRATERNITIES

ALLIED PATRIOTIC SOCIETIES, INC.—55 Broadway, New York, N. Y.

ANCIENT ACCEPTED SCOTTISH RITE OF FREEMASONRY.—Northern Jurisdiction, 73 Tremont St., Boston, Mass.
—Southern Jurisdiction—1733 16th St., Washington, D. C.

ASSOCIATED ADVERTISING CLUBS OF THE WORLD.—383 Madison Ave., New York, N. Y.

BENEVOLENT AND PROTECTIVE ORDER OF ELKS OF THE U. S. A.—1176 Congress Hotel, Chicago, Ill.

INDEPENDENT ORDER OF ODD FELLOWS.—12 West Clare St., Baltimore, Md.

INTERNATIONAL ASSOCIATION OF LIONS CLUBS.—348 McCormick Bldg., Chicago, Ill.

KIWANIS INTERNATIONAL.—Federal Reserve Bank Bldg., Chicago, Ill.

KNIGHTS OF COLUMBUS.—45 Wall St., New Haven, Conn.

KNIGHTS OF THE KU KLUX KLAN, INC.—2621 Peachtree St., Atlanta, Ga.

KNIGHTS OF PYTHIAS.—745 Security Bldg., Minneapolis, Minn.

LOYAL ORDER OF MOOSE.—Mooseheart, Ill.

MODERN WOODMAN OF AMERICA.—1504 3rd Ave., Rock Island, Ill.

ROYAL ARCANUM SUPREME COUNCIL—407 Shawmut Ave., Boston, Mass.

ROTARY INTERNATIONAL.—221 E. 20th St., Chicago, Ill.

WOODMEN OF THE WORLD, Sovereign Camp.—W. O. W. Bldg., Omaha, Neb.

(SOCIAL) HOME LIFE

LANDLORDS' COOPERATIVE ASSOCIATION.—116 Nassau St., New York, N. Y.

NATIONAL PLANT, FLOWER & FRUIT GUILD.—70 Fifth Ave., New York, N. Y.

NEW YORK ASSOCIATION FOR IMPROVING THE CONDITION OF THE POOR.—105 E. 22nd St., New York, N. Y.

OWN-YOUR-HOME EDUCATIONAL CAMPAIGN FOUNDATION.—524 First Ave., New York, N. Y.

OWN YOUR HOME LEAGUE, INC.—151 W. 33rd St., New York, N. Y.

(SOCIAL) CHILDREN

NATIONAL CHILD WELFARE ASSOCIATION.—70 Fifth Ave., New York, N. Y.

AMERICAN COUNTRY LIFE ASSOCIATION.—Amherst, Mass.

BIG BROTHER MOVEMENT, INC.—315 Fourth Ave., New York, N. Y.

CAMP FIRE GIRLS, INC.—31 E. 17th St., New York, N. Y.

CHILD CONSERVATION LEAGUE OF AMERICA.—3136 Wisconsin Ave., Berwyn, Ill.

CHILDREN'S AID SOCIETY.—105 E. 22nd St., New York, N. Y.

CHILD WELFARE LEAGUE OF AMERICA.—130 E. 22nd St., New York, N. Y.

BIG BROTHER AND BIG SISTER FEDERATION, INC.—1775 Broadway, New York, N. Y.

HEBREW SHELTERING GUARDIAN SOCIETY OF NEW YORK.—Pleasantville, N. Y.

LEAGUE OF AMERICAN CHILD CONSERVATION.—205 W. Monroe St., Chicago, Ill.

NATIONAL CHILD LABOR COMMITTEE.—215 Fourth Ave., New York, N. Y.

NATIONAL CHILD WELFARE ASSOCIATION.—299 West 43rd St., New York, N. Y.

SANTA CLAUS ASSOCIATION, INC.—Knickerbocker Bldg., 42nd St. & Broadway, New York, N. Y.

(SOCIAL) HEALTH

AMERICAN BIRTH CONTROL LEAGUE.—104 Fifth Ave., New York, N. Y.

AMERICAN CHILD HEALTH ASSOCIATION.—370 Seventh Ave., New York, N. Y.

AMERICAN MISSION TO LEPERS.—156 Fifth Ave., New York, N. Y.

AMERICAN POSTURE LEAGUE, INC.—1 Madison Ave., New York, N. Y.

AMERICAN SOCIAL HYGIENE ASSOCIATION, INC.—370 Seventh Ave., New York, N. Y.

ANTI-CIGARETTE LEAGUE OF NEW YORK STATE.—209 W. 107th St., New York, N. Y.

BENEVOLENT SOCIETY OF THE UNITED STATES FOR THE PROPAGATION OF CREMATION.—1828 Barnes St., New York, N. Y.

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COMMITTEE ON DISPENSARY DEVELOPMENT.—17 W. 43rd St., New York, N. Y.

EUGENICS RESEARCH ASSOCIATION.—Cold Spring Harbor, L. I., New York.

NATIONAL HEALTH COUNCIL.—370 Seventh Ave., New York, N. Y.

NATIONAL COMMITTEE FOR THE DISABLED.—245 E. 23rd St., New York, N. Y.

NATIONAL HOUSING ASSOCIATION.—105 E. 22nd St., New York, N. Y.

PLAYGROUND AND RECREATION ASSOCIATION OF AMERICA.—315 Fifth Ave., New York, N. Y.

(SOCIAL) MORALS

AMERICAN ASSOCIATION OF SOCIAL WORKERS.—130 E. 22nd St., New York, N. Y.

AMERICAN FUND FOR PUBLIC SERVICE, INC.—2 W. 13th St., New York, N. Y.

AMERICAN HUMANE ASSOCIATION.—80 Howard St., New York, N. Y.

ANTI-PROFANITY LEAGUE. — Ware, Mass.

CHARITY ORGANIZATION SOCIETY OF THE CITY OF NEW YORK.—105 E. 22nd St., New York, N. Y.

CHICAGO CRIME COMMISSION.—21 N. La Salle St., Chicago, Ill.

MORALITY LEAGUE OF AMERICA.—222 Madison Ave., New York, N. Y.

NATIONAL CHRISTIAN LEAGUE FOR PROMOTION OF PURITY.—5 E. 12th St., New York, N. Y.

NATIONAL COMMITTEE FOR BETTER FILMS.—70 Fifth Ave., New York, N. Y.

NATIONAL SAVE-A-LIFE LEAGUE, INC.—888 Seventh Ave., New York, N. Y.

NEW YORK SOCIETY FOR THE SUPPRESSION OF VICE.—215 W. 22nd St., New York, N. Y.

NON-SMOKERS' PROTECTIVE LEAGUE OF AMERICA.—101 W. 72nd St., New York, N. Y.

SAFETY FIRST LEAGUE.—47 W. 47th St., New York, N. Y.

TRAVELERS AID SOCIETY OF N. Y.—144 E. 44th St., New York, N. Y.

(SOCIAL) TEMPERANCE

ASSOCIATION AGAINST THE PROHIBITION AMENDMENT.—1523 L. St., N. W., Washington, D. C.

ANTI-SALOON LEAGUE OF AMERICA.—370 Seventh Ave., New York, N. Y.

CATHOLIC TOTAL ABSTINENCE UNION OF AMERICA.—Pittsburgh, Pa.

INTERNATIONAL NARCOTIC CRUSADE, INC.—156 Fifth Ave., New York, N. Y.

MODERATION LEAGUE, INC.—56 W. 45th St., New York, N. Y.

NATIONAL TEMPERANCE SOCIETY.—289 Fourth Ave., New York, N. Y.

WORLD LEAGUE AGAINST ALCOHOLISM.—150 Fifth Ave., New York, N. Y.

FOUNDATIONS

CARNEGIE FOUNDATION.—522 Fifth Ave., New York, N. Y.

CARNEGIE ENDOWMENT FOR INTERNATIONAL PEACE.—2 Jackson Place, Washington, D. C.

CARNEGIE HERO FUND COMMISSION.—2307 Oliver Bldg., Pittsburgh, Pa.

CARNEGIE INSTITUTE OF WASHINGTON.—16th and P. Sts., N. W., Washington, D. C.

GENERAL EDUCATION BOARD. — 61 Broadway, New York, N. Y.

GUGGENHEIM FOUNDATION.

HALL OF FAME FOR GREAT AMERICANS.—University of the City of New York, N. Y.

LAURA SPELLMAN FOUNDATION.

MORO EDUCATIONAL FOUNDATION.—342 Madison Ave., New York, N. Y.

ROCKEFELLER FOUNDATION.

ROCKEFELLER INSTITUTE.

ROOSEVELT MEMORIAL ASSOCIATION.—28 E. 20th St., New York, N. Y.

RUSSELL SAGE FOUNDATION.—130 E. 22nd St., New York, N. Y.

WOODROW WILSON FOUNDATION.—17 E. 42nd St., New York, N. Y.

WOMEN'S WORK AND PROGRESS

WOMEN'S EDUCATIONAL AND INDUSTRIAL UNION.—264 Boylston St., Boston, Mass.

AMERICAN ASSOCIATION OF UNIVERSITY WOMEN.—1634 I. St., N. W., Washington, D. C.

AMERICAN NURSES' ASSOCIATION.—370 Madison Avenue, New York, N. Y.

AMERICAN WOMAN'S ASSOCIATION, INC.—220 Madison Ave., New York, N. Y.

CHURCH WOMEN'S LEAGUE FOR PATRIOTIC SERVICE, INC.—130 E. 57th St., New York, N. Y.

COGNATE SOCIETIES

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| <p>GENERAL FEDERATION OF WOMEN'S CLUBS.—1734 N. St., N. W., Washington, D. C.</p> <p>NATIONAL AMERICAN WOMAN SUFFRAGE ASSOCIATION.—171 Madison Ave., New York, N. Y.</p> <p>NATIONAL ASSOCIATION OF WOMEN PAINTERS AND SCULPTORS.—17 E. 62nd St., New York, N. Y.</p> <p>NATIONAL COUNCIL OF ADMINISTRATIVE WOMEN IN EDUCATION.—1211 Gilpin Ave., Wilmington, Del.</p> <p>NATIONAL COUNCIL OF WOMEN, U. S. A.—3125 Lafayette Ave., St. Louis, Mo.</p> <p>NATIONAL FEDERATION OF COLLEGE WOMEN.—Rolla, Mo.</p> <p>NATIONAL LEAGUE OF GIRLS' CLUBS.—472 W. 24th St., New York, N. Y.</p> <p>NATIONAL LEAGUE OF WOMEN VOTERS.—532 Seventeenth St., N. W., Washington, D. C.</p> <p>NATIONAL WOMAN'S CHRISTIAN TEM-</p> | <p>PERANCE UNION.—1730 Chicago Ave., Evanston, Ill.</p> <p>NATIONAL WOMAN'S RELIEF CORP.—1401 Fairfax Ave., Los Angeles, Cal.</p> <p>NATIONAL WOMAN'S PARTY.—Capitol Hill, Washington, D. C.</p> <p>PROFESSIONAL WOMEN'S LEAGUE.—56 W. 53rd St., New York, N. Y.</p> <p>SOUTHERN WOMEN'S EDUCATIONAL ALLIANCE.—Hotel Richmond, Richmond, Va.</p> <p>WOMEN'S CHRISTIAN TEMPERANCE UNION.—156 Fifth Ave., New York, N. Y.</p> <p>WOMEN'S EDUCATIONAL AND INDUSTRIAL UNION.—264 Boylston St., Boston, Mass.</p> <p>WOMAN'S ROOSEVELT MEMORIAL ASSOCIATION.—Roosevelt House, 28 E. 20th St., New York, N. Y.</p> <p>WOMEN'S TRADE UNION LEAGUE.—247 Lexington Ave., New York, N. Y.</p> |
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DIVISION XV

LABOR AND LABOR LEGISLATION

CONDITIONS OF LABOR AND LABOR LEGISLATION

BY ETHELBERT STEWART

UNITED STATES COMMISSIONER OF LABOR STATISTICS

GENERAL PROGRESS

"Good Year."—The *American Federationist* in its issue of January, 1927, predicted that 1927 would be a "good year" for organized labor. With certain outstanding exceptions, this has been true. Increases in wages ranging up to 7½ per cent have been won by the railroad unions under the transportation act of 1926, and varying rates of increase have been obtained by many unions under collective agreement. Some progress is reported toward the five-day week, and the American Federation reports an increase in membership from 2,803,966 in 1926 to 2,812,407 in 1927. Data are not available for the individual affiliated unions, but of 108 affiliated organizations for which membership, as indicated by voting strength in the American Federation of Labor, is given, 40 reported an increase in membership, 25 reported a decrease, and 43 reported no change.

Conditions in the mining industry, the hosiery industry, the leather industry, the cigar industry, etc., have had their effect upon the unions in those industries, forcing them in some instances to make vigorous curtailments of benefits and protective measures. The glass industry has been confronted with difficulties arising from the strenuous competition of foreign manufacturers and as a protective measure is endeavoring to secure a higher tariff on imported glassware.

Combatting "Yellow Dog."—Vigorous attempts have been made by organized labor to combat the so-

called "yellow dog" contract by which non-union employers seek to make the employee bind himself not to join a labor union while in the employer's service. Measures have been introduced in the legislatures of several States declaring the use of such contracts opposed to the best interests and policy of the public. These bills, needless to say, have the wholehearted support of the organized wage earners of the country.

In the Courts.—Several setbacks have this year been sustained by organized labor in its relations with the courts of the country. The action of the Supreme Court in upholding by a divided court the issuance of an injunction against the stonecutters' union for refusing to work on stone quarried and partly cut by non-union labor has aroused the whole labor world. Taking the view of Justice Brandeis who wrote the dissenting opinion of the court, that the denial of the right of the unions to refuse to work under such circumstances comes dangerously near to "involuntary servitude," organized labor has pledged itself to a vigorous fight against the issuance of injunctions in labor disputes. The Clayton Act, originally regarded as "labor's charter," and the Sherman Anti-trust Act will probably also come in for attack.

DIFFICULTIES WITHIN THE LABOR MOVEMENT

Jurisdictional disputes between labor unions have long been a very fruitful cause of discord and loss of

prestige. The American Federation of Labor executive committee reports a very successful year in settling such disputes, some of which have extended over a long period of years. The report of the committee points out that "The development of jurisdictional disputes is inevitable in the progress and expansion of trade-union growth and activity; ability to find an adjustment in such disputes is also indicative of adaptability that is growth."

Agreements.—During the year, agreements were reached between the painters and the electrical workers over the painting of standards for street-lighting purposes, the work being given to the electrical workers; between the machinists and the teamsters over the cleaning and repair of automobiles and trucks in public garages, the cleaning being awarded to the teamsters and the repair work to the machinists; between the machinists and the steam and operating engineers, the agreement providing that the machinists shall have jurisdiction over the assembling, repairing, and dismantling of motors, except temporary repairs, which may be made by the engineers; and between the bricklayers, masons and plasterers and the operative plasterers, the agreement revoking the charters of certain locals of the latter which had been formed in violation of an agreement entered into in 1911 and transferring their membership to the bricklayers' union.

Agreements had not, at the time of the report, been reached between the electrical workers and the railroad signalmen over alleged infringements of the latter upon the jurisdiction of the former; between the machinists and the street and electric railway employees over the acceptance into membership by the latter, of men doing machinists' work; and between the tunnel and subway constructors and the hod carriers and building laborers.

Communist Activities.—Several unions have, this last year, been threatened with disruption because of the communist activities of a certain proportion of the membership. The outstanding instances are the In-

ternational Fur Workers' Union and the International Ladies' Garment Workers' Union. A terrific struggle for control of the union took place in both of these organizations, but in both instances the communists were defeated and expelled and the union was reorganized. During the struggle, however, the organizations lost ground in a number of respects. Union revenues, of course, fell off, owners of shops formerly unionized took advantage of the dissension to return to non-union conditions, and various social measures were lost or had to be relinquished later because of lack of funds and the demoralized condition of the union organizations.

TRADE-UNION POLICIES

New Wage Policy.—The American Federation of Labor has recently reaffirmed a wage policy which was originally formulated several years ago. No especial emphasis was placed upon it as first enunciated. During the past few months, however, the Federation has been vigorously advocating its new wage policy.

Perhaps the first activity of trade-unions is that of securing for their members increases in wages. It was soon realized, however, that higher money wages did not necessarily mean higher real wages, for if prices went up, a given money wage would buy less of the necessary commodities. Labor therefore endeavored to have its wages related to the cost of living and to have the contents of the weekly pay envelope increased in direct proportion to any increases in retail price. Such adjustments, do not, however, provide for any improvement of the standard of living, but simply for increases in wages just sufficient to enable the attainment of the same standard at increased prices.

Productivity.—The obvious increase of productivity per worker of late years has led to the adoption of the policy recently announced. How much of the increased production per man is due to the use of machinery, better methods and organization of work, etc., and how much to the worker is a question difficult of determination. Briefly,

labor's contention is that the producer must benefit from this increased output if he is to maintain his relative position in the scheme of things. "For higher productivity without corresponding increase of real wages means that the additional product has to be bought by others than the wage earner. This means that the social position of the wage earner in relation to other consumers becomes worse, because his standard of living will not advance proportionately with those of other groups."

The Federation is careful to point out that this does not mean that if prices and productivity go up 10 per cent, labor will insist that wages be increased exactly the same percentage. "Wages may keep pace with prices and productivity; wages may increase more, wages may decrease less—but always both prices and productivity are the measures for wages; always wages are related to prices and productivity."

Another significant statement of the Federation which may have important results is the one declaring that:

The American Federation of Labor is not committed to any single type of union structure. We leave that to the judgment of the workers, who best know the situation they must meet. In those industries where processes and machinery have been standardized as mass production necessitates, craft skill has disappeared from the fabrication and workers are finding new groupings for union organization. The important thing is the continuing necessity for labor organization, and finding cohesive ties that will make the union constructive and permanent.

LABOR'S ATTITUDE TOWARD CAPITAL AND INDUSTRY

Conciliation Gains.—The past year has seen the further development of a more and more conciliatory, co-operative attitude on the part of labor unions as regards the employers and the industry. More and more, intelligent union leaders are realizing that strikes result in loss for both workers and employers, and they are endeavoring to settle controversies by peaceful means, having recourse to strikes only as a last resort.

Arbitration is preferable to strikes and is the usual procedure in a number of industries when agreement can-

not be reached by the parties. In most cases arbitration is a purely voluntary and extra-legal matter. The past year, however, has seen the inauguration of a new arbitral system established by law on the railroads of the country, through the Parker-Watson Act of 1926, which superseded the transportation act of 1920 establishing the Railroad Labor Board.

Direct Settlement.—Even arbitrations are expensive, however, and direct settlement between men and management is desired where possible. The representatives of the men have through long practice become skilled in presenting the case of the workers and are being increasingly aided in this, especially in the case of the larger and stronger unions, by union statistical departments whose business it is to gather pertinent facts relative to prices, cost of living, costs of production, competitive and other conditions in the industry, etc.

Education.—Realizing that wage demands cannot continue to be successful indefinitely unless the union can demonstrate that the employer is getting more and better work for his money, some of the more farsighted unions, like those of the printers, printing pressmen, hosiery workers, electrical workers, lithographers, etc., are endeavoring, by study classes and technical schools started by the union, to increase the skill of the workers and to improve their knowledge of the industry and its problems. "Workers' education" is expanding rapidly, but, as the American Federation points out, it is "concerning itself less with education as a use of leisure and more with education as a tool for better control of the problems of shop and work."

Institutes to study the wider aspects of the industry to which they belong have been held by the electrical workers, the textile workers, a group of railroad labor unions, etc.

Cooperative Spirit.—In many instances, unions are evincing a strong interest and desire to cooperate in solving the larger problems of their own industries and of industry in general, and are lending their endeavors in the attempt to improve

conditions in the industry. Perhaps the most outstanding instance of such cooperation is that of the railroad shopmen's unions on seven large railroad systems of the country—the B. & O., the Canadian National Railways, The Chicago & North Western Ry. Co., the Chicago, Milwaukee & St. Paul Ry. Co., etc.

Pressmen.—There are other instances of such cooperation which are not so well known. The printing pressmen's union furnishes a free "engineering" service to newspapers with which the union has relations; each newspaper is studied with a view to improving it from a printing standpoint, suggestions are made to the publisher, and if necessary an expert is sent to the plant to oversee the changes necessary. So well has this service been received that the union states that many problems are voluntarily submitted by publishers to the unions' experts.

Clothing.—The established policy of the Amalgamated Clothing Workers is that of helping the industry. The official organ of the union states that "while it is still as true as it ever was that the union is a fighting army, an active participant in the industrial struggle, it is becoming more and more involved in the engineering of the industry." Instances are cited of cases in which the union has been able to improve the quality of the output, and even of cases in which the union has by its active cooperation and assistance helped the firm to meet conditions, due to competition, that threatened to overwhelm it.

The report of the executive council of the American Federation of Labor states that in practically every establishment operating under a collective agreement, there is some form of "continuous cooperation," such as joint determination of production standards, joint enterprises for the training of apprentices, joint unemployment funds, works committees, etc.

It is safe to say that were all employers to lay their cards upon the table and explain the situation to the unions, there would be many more such instances. In fact, some unions,

like the Order of Sleeping Car Conductors, have made repeated attempts, even in the face of continued unresponsiveness by the employer, to improve the service and conditions generally.

Conferences.—The above are cited as instances of the existence in organized labor circles of a widening interest in the welfare of industry which this year culminated in two conferences in this field, sponsored by organized labor. The first was held in April, 1927, and had for its subject the elimination of waste in industry. This elicited an active and serious response from the labor unions. It developed the point that the main source of industrial waste is unemployment, and a second conference was therefore held in July to consider unemployment from this angle. It is stated that the unemployment conference "did not attempt to solve the problem, but it at least made two things clear—first, that the problem of unemployment is not unsoluble, and second, that any far-reaching solution involves not only advance planning but also the cooperation of labor and management and the consumer in a common task."

SOCIAL AND PROTECTIVE MEASURES

Benefits and Pensions.—Nearly all of the stronger national and international unions have made provision, either independently or in cooperation with the employer, for various social or welfare benefits to their members. These include payments in case of strike or lockout, unemployment, death, sickness, disability, tuberculosis, etc., and in some cases, also, provision is made for aged members through the establishment of an old-age pension, or home for the aged, or both. Millions of dollars in this way are disbursed annually to trade-unionists by the labor organizations. Ten unions have adopted a clear-cut old-age pension system and this last year the Brotherhood of Electrical Workers joined their ranks by providing for a pension of \$40 a month to be paid to its aged members.

The 1927 convention of the American Federation of Labor placed itself

on record as favoring legislation providing for old-age pensions in place of the present discredited almshouse system, and instructed the executive council to prepare a draft of a general old-age pension bill, the adoption of which all labor bodies are to press for in their State legislatures.

Unemployment Insurance.—Some unions pay unemployment benefits to their members who are out of work, making disbursements for this purpose from the general trade-union funds. The unions in the clothing trades in which unemployment is an ever-present problem cannot, because of the very magnitude of the problem, carry this burden alone. They have therefore made one of their main objectives the securing of "unemployment insurance," maintained from contributions from both unions and employers. The essence of the plan is that a certain number of weeks' employment in each year or half year is guaranteed to each permanent worker in the industry. Failing this, he receives benefits from the joint fund in proportion to his earnings.

Such insurance had been secured by the Amalgamated Clothing Workers (employed on mens' clothing), by the International Ladies' Garment Workers' Union, and by the International Fur Workers' Union. The fund of the Amalgamated Clothing Workers is reported to be in good condition, but the same cannot be said of those of the other two unions. In the course of the factional struggle within the fur workers' union the unemployment fund was lost. The communists, who succeeded in gaining control for a time during the course of a strike, failed to include the insurance in the demands, and by the time the "regular" faction had regained control and the strike was ended, the union was in no condition to insist upon the renewal of the old agreement which had provided for contributions by the workers of 1½ per cent of their earnings and of a like amount by the employers. The union estimates that if the fund had been continued, on the basis of average earnings of \$50 per week per worker the contributions would have

amounted to \$18,000 a week, and from the time of the ending of the strike up to November, 1927, would have amounted to over a million dollars.

FINANCIAL AND OTHER VENTURES

Labor Banking.—The American Federation of Labor, which has steadily counseled its unions to go slowly in the matter of entering into banking and other financial fields, reiterated this advice in its recent convention, stating that "in our judgment the time has come to stop expansion in the field of labor banking until experience with those labor banks already organized shall have been critically studied and evaluated. It is unwise to experiment further until we know exactly which policies are safe and dependable."

This action was probably prompted in part by the financial difficulties of the Brotherhood of Locomotive Engineers' banking and other projects. The latter organization, however, met the immediate situation with an issue of certificates of indebtedness to which the membership was urged to subscribe and latest reports from the organization are that, while its field of financial activities will be somewhat curtailed, it will continue to carry on its main ventures, including the project at Venice, Fla.

Banks.—Most of the labor banks have shown a gradual but steady growth in resources. Only one has failed, though several others have been sold to private interests. On June 30, 1927, the total resources of the 33 banks stood at nearly 125 million dollars. The surplus and undivided profits amounted to more than 3½ millions.

Housing.—The Amalgamated Clothing Workers has this past year been actively forwarding the cooperative supply of housing accommodations for its members. The work is being financed through a separate organization and means are provided for making loans to those of its members who are desirous of securing a cooperative apartment but have not the money for the down payment. A group of six apartment houses is being constructed. Two of these

CONDITIONS OF LABOR AND LABOR LEGISLATION

were opened November 1 of this year and the third and fourth were opened for occupancy December 1 and 15, providing, in all, accommodations for more than 175 families. These apartments rent for \$11 per month per room.

The Union Labor Life Insurance Co. was formally opened on June 1, 1927. This company had been talked of for some years, the idea being that it would eventually take over, on a strictly actuarial basis, the protective work formerly done through the "benefits" of the unions. Although a union organization writing general insurance had been in existence since 1924, in the form of the Union Co-operative Insurance Association operated by the Brotherhood of Electrical Workers, the Union Labor Life Insurance Co. represents the first excursion of the American Federation of Labor into the business field.

Publicity.—That the labor movement is becoming alive to the value of getting labor's case before the public is indicated by a resolution of the 1925 convention of the American Federation of Labor authorizing the executive council to make an investigation with a view to the establishment of a chain of radio broadcasting stations throughout the country, to be owned, controlled, and operated by organized labor. The first step in this field was taken July 11, 1926, when the radio station of the Chicago Federation of Labor, WCFL, was formally opened in that city. During this past year its programs have been a regular radio feature in Chicago. Quite recently a group of labor unions in New York have cooperated to establish the Debs Memorial Station WEVD which went on the air October 1, 1927.

The question of the numerical growth or decline of trade unionism in the United States is perhaps best portrayed by the list of unions affiliated to the American Federation of Labor. The growth or decline of the non-affiliated unions usually corresponds very closely to those in the Federation. What is believed to be the best concise statement of trade union organizations in the United States, and which covers all classes

of organizations whether affiliated to the American Federation of Labor or not, is the "Handbook of American Trade Unions," published by the Bureau of Labor Statistics as its bulletin No. 420, which is obtainable by application to that Bureau. Below will be found a statement of membership of unions affiliated to the American Federation of Labor for 1926 and 1927.

MEMBERSHIP OF UNIONS AFFILIATED TO THE AMERICAN FEDERATION OF LABOR, 1926 AND 1927 (Based upon voting strength)

Union	1926	1927
Actors and artists.....	10,400	10,300
Asbestos workers	2,500	2,600
Bakery and confection- ery workers	21,600	21,900
Barbers	51,200	54,500
Bill posters	1,600	1,600
Blacksmiths	5,000	5,000
Boilermakers	14,500	14,800
Boot and shoe workers..	36,900	35,000
Bookbinders	12,900	13,800
Brewery workmen	16,000	16,000
Brick and clay workers.	5,000	5,000
Bricklayers, masons and plasterers	70,000	83,700
Bridge and structural iron workers	19,100	21,300
Broom and whisk makers	600	500
Building service em- ployees	6,200	6,200
Carpenters and joiners..	319,700	322,000
Carmen, railway	88,700	80,000
Carvers, wood	1,100	1,200
Cigar makers	20,000	18,300
Clerks, retail	10,000	10,000
Cloth hat and millinery workers	8,700	10,200
Conductors, sleeping-car	2,300	2,300
Coopers	1,100	1,000
Diamond workers	400	400
Draftsmen	700	1,600
Electrical workers	142,000	142,000
Elevator constructors ..	9,500	10,200
Engineers, steam	27,000	30,200
Engravers, metal	100	100
Engravers, photo	7,700	7,900
Federal employees	17,900	20,000
Fire fighters	16,000	16,000
Firemen, stationary ...	8,000	9,000
Foundry employees	3,500	3,500
Fur workers	7,800	7,200
Garment workers	47,500	47,500
Glass bottle blowers....	6,000	6,000
Glass cutters and flat- teners, window	300	400
Glass workers, flint....	5,300	5,200
Glass workers, window..	2,000	2,000
Glove workers	500	600
Granite cutters	8,500	8,500
Hatters	11,500	11,500
Hod carriers	66,500	70,000
Horseshoers	1,500	1,200
Hotel and restaurant employees	38,600	39,800

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MEMBERSHIP OF UNIONS AFFILIATED TO THE AMERICAN FEDERATION OF LABOR, 1926 AND 1927—Continued

Union	1926	1927
Iron, steel and tin workers	10,000	9,900
Jewelry workers	700	600
Ladies' garment workers	80,100	80,000
Lathers, metal	16,000	17,500
Laundry workers	5,500	5,500
Leather workers	1,700	1,000
Letter carriers	40,000	40,000
Letter carriers, rural	500	600
Lithographers	5,400	5,700
Longshoremen	30,100	34,700
Machinists	71,400	72,300
Maintenance of way employees	29,100	28,200
Marble workers	4,200	4,900
Masters, mates, and pilots	3,400	3,100
Meat cutters and butchers	12,200	11,700
Metal workers, sheet	25,000	25,000
Mine workers	400,000	400,000
Mine, mill and smelter workers	8,100	4,000
Molders	28,400	26,500
Musicians	80,000	80,000
Oil field workers	700	1,000
Painters	111,400	112,900
Paper makers	4,600	4,000
Pattern makers	7,000	7,000
Pavers and rammermen	2,000	2,000
Paving cutters	2,400	2,400
Piano and organ workers	600	500
Plasterers	32,200	39,000
Plumbers and steam fitters	45,000	45,000
Polishers, metal	6,000	6,000
Post office clerks	27,900	30,000
Potters	7,800	7,200
Powder and high explosive workers	200	200
Printing pressmen	40,000	40,000
Printers, plate	1,200	1,200
Pulp, sulphite and paper mill workers	5,000	5,000
Quarry workers	3,000	3,000
Railway employees, street and electric	101,000	101,200
Railway Mail Association	19,500	19,400
Roofers, tile and composition	3,000	4,000
Seamen	15,000	15,000
Siderographers	100	100
Signalmen	8,000	8,000
Stage employees, theatrical	22,000	23,100
Stereotypers and electrotypers	6,900	7,300
Stonecutters	5,700	5,800
Stove mounters	1,600	1,600
Switchmen	8,700	8,900
Tailors	8,300	7,700
Teachers	3,500	3,500
Teamsters, chauffeurs	82,000	86,500
Telegraphers, commercial	4,200	3,900
Telegraphers, railroad	35,000	35,000
Textile workers	30,000	30,000
Tobacco workers	1,400	1,400
Tunnel and subway constructors	3,700	4,000
Typographical union	73,300	74,900
Upholsterers	8,600	10,200
United wall paper craft	600	600
Wire weavers	400	400
Centrals	83,300	79,400
State branches	4,900	4,900
Directly affiliated locals	45,500	46,700
Total	2,879,000	2,919,100

LABOR IN POLITICS

By LINDLEY D. CLARK

UNITED STATES EMPLOYEES' COMPENSATION COMMISSION

Policies.—The definition of Politics requires a more inclusive content than that of partisan activity to serve as a member of the title given above, since the current interest of Labor, so far as the significant expressions of the year indicate, is in principles and methods rather than political affiliations. Without intending the slightest contrast with previous conditions and attitudes, it may be said that nothing is more evident in the present policies of Organized Labor in the main than the purpose to avoid class lines and to seek for mutual understanding and co-operation. Such, at least, is the recurrent theme of

editorials and contributions to the labor press, and such seems a legitimate conclusion from the vigorous and usually successful effort to prevent the ascendancy of the communist and other more radical elements in the councils of labor. Communism and Fascism were placed under the same ban of condemnation at the recent annual convention of the A. F. of L., as "each representing a dictatorship opposed to the idea of liberty." However, there are not lacking those—perhaps not themselves altogether irenic—who see in some of the efforts of Labor to influence legislation evidence of a class purpose.

LABOR LEGISLATION

The Report of the Executive Council of this Convention of 1927 places as the first "outstanding achievement" of the year "progress toward mutual understanding." While this relates chiefly to questions of employment and production, the outreach of the principle extends to suggested political activities as well. The violent denunciation of this friendly attitude on the part of the Federation and other likeminded wage-earners under the term "class collaboration," and the use of the stigmatizing epithet, "class collaborationists" by the Communist element of the New York Garment Workers' group, are significant expressions of the two positions in politics as well as in industry.

Preparing for 1928.—The political note of the year is essentially one of preparation for the activities of 1928. A constant battle has been waged throughout the year in support of the primary system of selecting candidates for public office, in opposition to the very considerable movement for a return to the convention plan. While legislative attempts at repeal or modification are reported in more than 30 of the 44 States whose legislatures met this year, no repeal seems to have taken place, while in some States a strengthening of the law is reported. A submission of repeal to a referendum vote in the State of Maine resulted in decisive defeat.

Economic Legislation.—Wage-earners are urgently called upon to vote, and to seek declarations in all party platforms favoring progressive legislation,—not such as grants to any person or class "special privileges, but advances economic principles that will be of benefit to all the people

except those who favor reaction." This calls for the legislative committees of every local, city, State and National body to "become non-partisan political campaign committees which will prepare for a most intensive agitation for the election of outstanding candidates, who, by their records have shown that they will be true to the people."

True, a caviler may ask for a definition of the term "people", and suggest that its meaning may approximate that of the term "class" in the mouths of those who use the latter; but it is at least obvious that the non-partisan attitude is sufficiently opposed to "mass action" to offer a much more hopeful ground for co-operation than would be possible were it attempted to force all political efforts and aspirations through a labor party channel.

Serious disappointment continues to be voiced over the failure of the Clayton Act to secure the desired ends; but efforts to procure the enactment of anti-injunction laws by Congress have so far been unsuccessful, and hardly less so in the States. It is perhaps in working for such enactment that Labor is regarded by opponents of such measures as seeking to exempt a class from legal restrictions generally binding; and the contention that the proposed action is "class legislation" doubtless goes far to explain the slight progress made in that direction. On the other hand, is a watchfulness on the part of Labor to prevent legislation regarded by it as inimical to its interests, and the Executive Council of the A. F. of L. reports that some "most pernicious legislation was defeated" during the year 1927.

LABOR LEGISLATION

BY IRENE OSGOOD ANDREWS

ASSOCIATE SECRETARY, AMERICAN ASSOCIATION FOR LABOR LEGISLATION

NEW ENACTMENTS

The legislatures of 44 states and 4 territories or insular possessions and the Federal Congress held regular sessions in 1927. Several legis-

latures also met in special session. A large number of labor laws were enacted, chiefly liberalizing amendments to workmen's compensation and mine safety acts. Among new

enactments the most important were the Federal longshoremen's workmen's compensation law and a women's eight-hour law in New York.

EMPLOYMENT OF WOMEN AND MINORS

Eight-Hour Law.—After years of effort by labor and social welfare organizations, New York has an eight-hour law for women employed in manufacturing and mercantile establishments, reducing the daily and weekly hour limits from 9 and 54 to 8 and 48, but 78 hours overtime are allowed during the calendar year, provided that in no case hours shall be more than 9 a day and 54 a week. In case one day is shortened to 4½ hours (Saturday half holiday), work during the other five days may be lengthened to 9 hours, totalling 49½ hours a week. Notices of overtime in form furnished by the industrial commissioner are to be posted in places of work and filed with the Department of Labor.

Arizona extended her 8 hour law to women in all employments, except domestic service and harvesting or preserving perishable fruits and vegetables; reduced the weekly limit from 54 to 48 hours, and provided one-day-of-rest-in-seven, except for adult women who, in any given week, have been employed not more than 6 hours a day. The period within which the eight hours of work are to be included was extended from 12 to 13 hours. Minnesota, Michigan and North Dakota extended exemptions from hour laws. California strengthened the investigating powers of the industrial welfare commission and penalized failure to comply with its orders fixing hours and standard conditions of labor for women and minors.

Child Labor.—Montana ratified the child labor amendment to the Federal constitution. North Carolina forbade employment of minors between 14 and 16 years of age for more than 8 hours a day and 48 hours and six days a week in the list of employments prohibited for children under 14. Night work for such persons in these occupations was prohibited after 7 P. M. instead of 9 P. M., but a clause was

added stating that minors over 14 years of age who have completed the fourth grade in school may be employed between 6 A. M. and 7 P. M. This clause the Attorney-General has interpreted to mean that the 8-hour provision applies only to minors who have not completed the fourth grade. Those who have completed the fourth grade may work 11 hours a day and 60 hours a week as formerly. Maine added bowling alleys and pool rooms to list of prohibited places of employment for minors under 14 years of age, strengthened regulations of employment in places of amusement and elevators, and raised the educational requirement for work permits from completion of the sixth to completion of the eighth grade. Connecticut extended prohibition of employment of females after 10 P. M. to all minors and also forbade employment of minors under 16 after 6 P. M. on more than one day a week except during the Christmas rush.

School Attendance Exemptions.—A number of bills to weaken the compulsory school attendance laws were defeated but Maine joined the growing list of states which allows exemption from school attendance and granting of work certificates to sub-normal children. Connecticut and West Virginia also weakened requirements for work certificates while Minnesota dropped products containing white lead from the list of prohibited employments. The most notable advance in legislation for minors was the provision in three states for extra workmen's compensation for those illegally employed. (See article on "Workmen's Compensation and Insurance.")

Hours and Rest Periods.—Colorado limited work in and about cement and plaster plants to eight a day, thus following the example of Nevada and Arizona, but excepting at the time of monthly, semi-monthly and weekly change of shifts when two 8-hour shifts may be worked provided a rest period of 8 hours intervenes between the two. The Nevada 8 hour law for workers underground was made more specific, the eight hours to be reckoned from the time of reaching the working place to that

of reaching the surface, but days of changing shifts were excepted from the operation of this provision.

Wisconsin's one-day-of-rest-in-seven law was put under control of the industrial commission, which was authorized by general or special order, to make reasonable exceptions when upon investigation the law is found to work unnecessary hardship, provided that the health, safety and welfare of the employee is not endangered by the exception. Sunday barbering was forbidden in New Jersey. South Dakota provided for all state employees a two weeks' vacation for each full year of employment and fourteen working days leave of absence for sickness per year without loss of pay. Kansas provided a two weeks' vacation for certain skilled public employees and Massachusetts required the Department of Labor to enforce the law providing annual vacations for certain municipal laborers. California strengthened her eight-hour law on public works and New York provided for investigation of hours and wages for public work upon complaint of any person interested.

SAFETY AND HEALTH

Sheppard-Towner Act.—The provisions of the Sheppard-Towner maternity act were accepted by Maine and Kansas, leaving only three states, Massachusetts, Connecticut and Illinois, which have not accepted the Federal aid provided for education in this field. Congress continued the provisions of the Sheppard-Towner act until June 30, 1929, and declared it repealed after that date.

Coal mine safety codes were strengthened in a number of states, notably Indiana, Ohio, Washington and Wyoming. Indiana enacted a detailed rock-dusting law obligatory in all dusty mines employing more than 10 men. Wyoming made rock-dusting obligatory, instead of permissive, in all gaseous dusty mines and established standards. Ohio authorized substitution of rock-dusting for sprinkling, and strengthened requirements, including examinations, for certified foremen and fire bosses.

Certification of all such officials was made obligatory in gaseous mines, and for at least one foreman in non-gaseous mines employing 25 or more men. Safeguards for oil wells were also greatly strengthened.

Washington reorganized inspection and examination departments, and made extensive provision for education in safety standards. Every mine is required to establish a general safety committee, composed of mine officials and miners, to investigate accidents, make bi-monthly examinations of the mine, and report findings and recommendations in writing. In all mines employing more than 25 men, sub-committees on each level and an outside committee were required and procedure was provided for cooperation with each other and with the management in safety practice and education. Wyoming provided, that, upon request of the miners, a committee consisting of the foremen and two miners should be appointed to inspect the mine and report conditions to the state inspector.

Illinois and West Virginia extended provision for rescue work, while Montana and Pennsylvania weakened safeguards as to shot firing and ventilation in mines employing certain mechanical devices, and Colorado and Iowa exempted small mines from certain requirements. Following a major mine disaster, Tennessee authorized a commission to investigate safety methods and make recommendations.

Protective Measures.—For protection of construction workers in cities of 50,000 or more, Missouri enacted a detailed code, and Wisconsin prescribed safety regulations in regard to construction of buildings or loading platforms near railroad tracks. California provided for establishment of public service districts to maintain public labor camps in connection with any work performed within the districts. Connecticut authorized the department of health to investigate and make recommendations for elimination of occupational diseases and New York continued the commission organized in 1926, for investigation of working conditions in man-

ufacturing and mercantile establishments.

WORKMEN'S COMPENSATION

New Federal Act.—The new Federal Workmen's Compensation act covers longshoremen and other workers upon navigable waters, who are not entitled to compensation under state laws. It is administered by the Federal Employees' Workmen's Compensation Commission and its provisions are comparatively liberal. Congress also amended the act covering Federal civil employees, raising the minimum and maximum weekly payments from \$33.33 and \$66.67 to \$58.33 and \$116.66, respectively, and burial allowance from \$100 to \$200.

Amendments. — Besides these changes by Congress, 34 jurisdictions amended their workmen's compensation laws, the most notable advances being made by Alaska, Kansas, Michigan and Pennsylvania. Alaska raised compensation for disability from 50 to 65% of wages, Michigan from 60 to 66⅔%, Pennsylvania from 60 to 65% and Kansas, for cases of permanent partial disability, from 50 to 60%. Alaska also raised death benefits and scheduled payments for loss of members fully 15%, increasing the total maximum payment from \$7,800 to \$9,000. Michigan raised the total maximum from \$7,000 to \$9,000. Other states which increased payments for some cases or classes of injury were New York, Massachusetts, Illinois, Indiana, Wisconsin, Connecticut, Tennessee, South Dakota, Rhode Island, Vermont and Montana. Idaho created a second injury fund and Washington a surplus fund to provide for services needed after expiration of employers' contracts with hospitals or physicians.

Maryland, Michigan and Illinois provided extra compensation for illegally employed minors. Maryland and Wisconsin extended coverage to prisoners, Massachusetts to employees working outside the state and Delaware, Texas, Tennessee and Minnesota to certain public employees. Pennsylvania reduced the waiting period from 10 to 7 days and Texas made compensation for the waiting period retroactive in cases of disability

lasting more than four weeks. Kansas made the greatest advance in administration, putting the compensation law in the hands of the public service commission instead of the courts and making insurance of employers' risk obligatory. South Carolina accepted the provisions of the Federal Vocational Rehabilitation Act, leaving only seven states which are not cooperating with the Federal Government in rehabilitation of persons injured in industry. (See "Workmen's Compensation and Insurance.")

EMPLOYMENT AND PAYMENT OF WAGES

Regulation.—The regulation of private employment agencies was strengthened in California and Indiana, while Wisconsin authorized extension of facilities for public employment offices. West Virginia raised the license fee for agents recruiting labor to go outside the state from \$250 to \$5,000, thus joining the list of southern states which practically prohibit such enterprise. Payment of wages in script in West Virginia was again made legal under certain regulations and provisions exempting a certain portion of wages of persons with dependents were strengthened in Washington and Wisconsin. Wages of state employees were made liable to garnishment in Colorado and South Dakota. Mechanics' lien laws were extended or strengthened in a number of states. In California the provisions of the loggers' lien law were extended to cover work performed with the laborer's live stock, machinery or appliances, and all labor performed in connection with manufacturing of timber products. Washington revised provisions regarding farm laborers' liens, prohibiting liens upon crops of orchards, and upon the landlords' shares of crops if labor thereon was performed at request of the tenant.

The law regulating advertising for employees in time of strikes was strengthened in California. Also false representation to defraud a person of labor was included under definition of larceny or theft and hiring additional employees without advising

EMPLOYMENT

each of labor claims due and unpaid by the employer was declared to be prima facie evidence of intent to defraud. (For old age pensions and further details, see "Workmen's Compensation and Insurance.")

EMPLOYMENT

By JOHN B. ANDREWS

SECRETARY, AMERICAN ASSOCIATION FOR LABOR LEGISLATION

MANUFACTURING EMPLOYMENT INDEX

Decline in Industrial Activity.—

The index of employment in manufacturing (U. S. Bureau of Labor Statistics) for the first eleven months of 1927 averaged 88.9 as compared with 91.9 for the year 1926. The report of the Federal Reserve Board (N. Y. Times, Jan. 3, 1928) states "Industrial and trade activity in the United States showed a further decline in the last weeks of 1927, when allowance is made for the usual seasonal trend, and at the end of the year production and wholesale trade were in smaller volume than at the close of any year since 1924. Notwithstanding the recession in business in recent months, the volume of activity for the year as a whole was nearly as large as the record established in 1926."

Increasing Capacity of Fewer Employees.—

The number of persons employed in manufacturing, however, as shown by the employment index of the Bureau of Labor Statistics, is lower than for any year since the beginning of the series in 1914, with the exception of 1921, and 10% lower than in 1923. This simultaneous increase in production and decrease in number employed, in the period since the end of the World War is largely due to the greatly increased production per employee, which is conclusively shown by the Census of Manufacturers whose report for 1925 was published during the current year. A release of the Department of Commerce, May 11, 1927, announced that "according to a study of figures from the Census of Manufacturers, the quantity or physical volume of manufactures produced per person engaged in manufacturing increased nearly 50% between 1899 and 1925, reflecting

a growth of nearly 180% in quantity of production and of less than 90% in total number of persons employed. Expansion in output per person has been particularly large during recent years, amounting to 10% in the two years from 1923 to 1925 and to 40% in the six years from 1919 to 1925."

Analysis.—The total number of wage earners in manufacturing, as reported by the Census, was larger in 1919 than for any year since, but between 1919 and 1925 actual production increased 29% while the number of producers decreased by 600,000. In 1926 and 1927, production per employee continued to rise while in 1927, the number employed was still lower than for 1925. This growth in production per employee is stated by the Department of Commerce to be due to two principal causes, (1) increasing utilization of machinery and power, and improvement in methods and management; (2) the shifting of production from industries dependent in a large degree upon labor to those more susceptible of mechanization and mass production, such as manufacture of motor vehicles.

Production per employee in other industries shows a corresponding increase. The Department of Commerce states (*Commerce Yearbook* for 1926, Vol. 1, p. 16-24) that between 1899 and 1925 the output per worker has increased 48% in manufacturing and railroad transportation, 45% in agriculture and 99% in mining. The average increase for all four groups was 79%. The increase in production of goods and services in other fields has been even greater. "This is indicated by the fact that the number of workers in these four branches increased between 1899 and

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1925 by only 35% as compared with 54% for the total population, reflecting the shift from agriculture, and more recently from manufactures, into commerce, professional and personal service and construction. It is reasonable to assume that the increase in total output of goods and services of all kinds per person in the total population has been as great as the increase in output per worker in the four great branches of agriculture, mining, manufactures and railroad transportation." (*Commerce Yearbook*, Vol. 1, p. 17.) The estimated number of agricultural workers was the same, 10,500,000 in 1899 and in 1925. The number in 1919 was 11,300,000.

Index Details.—Returning to a more detailed study of the Bureau of Labor Statistics index of employment in manufacturing for 1927, we find that the average for the first six months was 90.2 (average for 1923—100) as compared with 92.5 for the corresponding period in 1926, but for the next five months (July-Nov.) was 87.2 as compared with 91.3 in 1926. The index for November dropped to 85.9 with still further decrease indicated for December. The average index for the last six months of the year was lower than for the corresponding period in any year since the beginning of the index series in 1914, and lower than for any consecutive six months except during the deepest depression in the early part of 1921.

THE TEXTILE INDUSTRY

Mill Owners Benefit.—Improvement has taken place in this industry in 1927. According to the Federal Reserve Board's indexes of production and employment, the monthly average of production in the textile industry during the first ten months of 1927 was 114.7, as compared with 104 for each of the years 1925 and 1926, a gain of 14%; but employment in that industry for the corresponding periods was hardly 1% greater in 1927 than in 1926 and 2.5% lower than in 1925. Curtailment of production and wage cuts in many of the large northern mills during the last two months of the year indicate still less employment. Thus it ap-

pears that the heralded improvement in the textile industry is for the mill owners, attended with longer hours, lower wages and loss of jobs for the textile workers.

Employment Figures.—This contrast is brought out still more clearly in a detailed study of cotton textiles (*Monthly Labor Review*, July, 1927). This shows that for the first five months of 1927, employment in New England mills was 80.3, in the middle Atlantic states 67.5 and in the southern states 102.8 (Average of 1923 = 100). Figures for the different geographical sections for the remainder of the year are not at hand, but they probably were about the same as the index for all the states combined ranged between 86 and 88 throughout the year. A further comparison of the first five months of each year since 1923 shows a decline in employment for each succeeding year in northeast and middle Atlantic states. Increase in employment has been confined to the southern states, where hours are long and wages low, and at no time has offset the decrease in the north.

COAL MINING

The bituminous coal miners are also suffering extremely in consequence of producing more than the mine owners can dispose of at the present price. According to the official reports of the U. S. Bureau of Mines (*Bul.* 283, 1927), the amount of coal mined daily per employee increased between 1919 and 1925 about 17%, while the average number of days of employment decreased from 209 to 192, the average for the seven years (1919-1925) being 191. During the same period the percentage of coal mined by machinery grew from 56.4% to 70.6%.

The Strike and Production.—Corresponding figures for 1926-1927 are not available, but it is significant that though the miners in the principal bituminous fields of the northern states have been on strike since the first of April, endeavoring to prevent a drastic wage cut and destruction of their union, the average monthly index of bituminous coal production during the first ten months

of the year, was over 100 (average 1923-1925 = 100), equal to the average of 1925 and only 10% below that of 1926, which owing largely to the British coal strike, was the year of record production. The United Mine Workers in a statement addressed to the Senate Committee on Interstate Commerce claim that the companies of western Pennsylvania have imported tens of thousands of workers, inexperienced in mining, from cities and also thousands of negroes from the cotton fields of the south (N. Y. *World*, Jan. 18, 1928.)

AGRICULTURE

Rising prosperity in agriculture, reported for 1927, largely due to a small cotton crop, has not resulted in more employment for agricultural workers. The rapid introduction of traction plows, harvesters and other farm machinery in the grain states has made fewer laborers necessary. The newly perfected cotton-picking machines are now entering a field where hand labor has heretofore prevailed.

LABOR'S REMEDIAL PROGRAM

Productivity and Wages.—The remedial program of conservative labor in addition to urging the five-day week and shorter working day, now includes the idea of measuring wages by productivity instead of by cost of living alone. This was discussed at the annual American Federation of Labor Convention in Los Angeles. A series of research studies published by the American Federation of Labor, seek to determine labor's share in manufacturing industries, and an index of labor's share in production and consumption (*American Federationist*, Oct.-Dec., 1927).

Bryn Mawr Conference.—A conference on unemployment, called by the Labor College of Philadelphia was held at Bryn Mawr on July 30-31, 1927. It was attended by 150

trade union delegates, students at the Bryn Mawr Summer School and many economists. H. E. Bartow, Secretary of the Pierce School of Business Administration, in an address on unemployment in Philadelphia and vicinity, stressed the idea that business prosperity demanded an increase in the purchasing power of labor. Since wage earners form the great bulk of the consumers, "the surest safeguard against depression is steady employment at good wages for the great mass of customers."

Public and Private Planning.—Edward E. Hunt, Secretary of the President's Conference on Unemployment, 1921, and Charles H. Chase of the Institute of Economics, stressed advance planning in private and public industry. Mr. Hunt stated that the National Government is committed to the wise policy of holding back public works when private industry is active and releasing them in dull periods.

Mr. Hunt was also one of the speakers at a hearing held on February 26 before the Senate Committee on Commerce on a resolution, introduced by Senator Pepper, to authorize a committee of five senators to study the stabilization of employment and industry through advance planning of public works with a view to incorporating this principle in Federal legislation. Otto T. Mallory of Philadelphia, treasurer of the American Association for Labor Legislation and chairman of its committee on public works, made the principal presentation of the need of such advance planning and introduced other speakers, including H. G. Moulton of the Institute of Economics, A. C. Oliphant of the General Engineering Council, Mr. Sawyer of the Associated General Contractors of America and John B. Andrews, Secretary of the American Association for Labor Legislation. The resolution was favorably reported.

LABOR MEDIATION, STRIKES AND LOCKOUTS

BY ETHELBERT STEWART

UNITED STATES COMMISSIONER OF LABOR STATISTICS

MEDIATION AND ARBITRATION

Railroad Labor Disputes.—The United States Board of Mediation completed its first year of operation in 1927. This board may be regarded as the mainspring of the system created by the railway labor act of 1926 for the adjustment of railroad labor disputes. That act provided that primary action in the case of railroad labor disputes should be taken by boards of adjustment created by agreement of the employers and employees interested. In case a dispute cannot be settled by a board of adjustment, the services of the United States Board of Mediation may be invoked. This board attempts to settle the controversy by mediation, and failing in this, seeks to obtain the consent of the parties to arbitration agreed upon by arbitrators.

In case all these efforts fail, and the board of mediation believes the controversy may result in serious interruption of interstate commerce, the President may appoint an emergency board to make investigation and report to the President. There is, however, nothing savoring of compulsory arbitration in the act. Thus far, no occasion has arisen for the appointment of emergency boards.

Cases Adjusted.—During the fiscal year ended June 30, 1927, the Board of Mediation received 265 separate applications for its services, these applications involving 42 railroad labor organizations and 208 carriers. Of these 265 cases submitted to the board, 116 had been adjusted by the end of the fiscal year, 57 being settled through mediation, 32 being submitted to arbitration, and 27 cases being withdrawn or otherwise disposed of. The cases varied greatly in the number of carriers and employees involved, one case involving as many as 48 carriers and 90,000 employees and others involving only a single carrier and as few as six employees.

As a result of the arbitration hear-

ings and awards, the employees, in the main, were successful in obtaining increases in wages, though usually these were not so large as were asked for. The smallest rate of increase granted was given in the case of the maintenance-of-way employees on the two railroads—the Louisville & Nashville and the Chicago & North Western—for which the trackmen's cases have been decided. The increases in these two cases ranged from one-half cent to 3 cents per hour, or from \$1.04 to \$6.24 per month.

The outstanding case in which an upward adjustment of wage rates was denied was that of the conductors and trainmen on some 55 Western railroads. This action on the part of the arbitration board came as a surprise, especially since these classes of employees on the railroads of the East and Southeast had just been granted an increase of 7½ per cent.

The Division of Conciliation of the Department of Labor is a permanent organization with a staff of experienced conciliators. During the fiscal year ended June 30, 1927, the conciliation division used its good offices in 545 industrial disputes. Of this number, 24 cases were pending at the close of the year; 395 cases were adjusted; 69 cases were closed without the assistance of the commissioners; and 57 disputes are listed as "unable to adjust." The cases presented for settlement during the year directly or indirectly affected more than a half million persons.

State Mediation Agencies.—A number of the States have established mediation and conciliation agencies, usually as part of the State department or commission dealing with labor matters. It is impracticable to describe the work of these agencies in detail, but that of New York State may be cited as an example. In New York there is, as one of the main divisions of the State Department of Labor, a bureau of industrial relations with a special division of

LABOR MEDIATION, STRIKES AND LOCKOUTS

mediation and arbitration. The function of this division is to seek the peaceful adjustment of all industrial controversies within the State. In the fiscal year ended June 30, 1927, this division reports that it intervened in 64 disputes out of a total of 99 reported. In 24 cases conferences between the contestants were arranged, with the result that agreements followed in 22 instances. Conferences were declined in 32 instances, it being the employer in each case who declined.

Important Arbitrations.—A very acute jurisdictional dispute between the bricklayers' and plasterers' unions was referred to a board of arbitration of which Elihu Root was chairman, and a decision was handed down in January, 1927. The points in dispute were too technical for elaboration here, but the case was significant as representing a serious effort by two important unions to settle a controversy between themselves by arbitration.

Among the various printers' unions arbitration as a method of settling disputes with their employees has been long established. A number of cases of this character were thus disposed of in 1927. Thus, a decision involving the Omaha Typographical Union and three newspapers of that city was made in February, 1927, by an arbitration board with a neutral chairman, and awards of similar character were made in Portland, Ore., involving the pressmen's and the American Newspaper Publishers' Association, and, in Denver, Col., involving the local typographical union and the American Newspaper Publishers' Association.

Aside from the railroads, however, there were, during 1927, no arbitration proceedings involving any wide area. Partial settlements in the bituminous coal strike were obtained by direct agreement between the parties affected. Similarly, the strike or suspension of cutters and flatteners employed in window-glass factories in various States throughout the country was settled in October by direct agreement.

The fact, however, that many controversies are settled without arbitra-

tion or without evidences of mediation does not mean necessarily that mediation by outside agencies did not have a valuable influence upon the results. By its very nature mediation work must usually be done quietly and inconspicuously, and the most important results are often obtained without the slightest public credit.

STRIKES AND LOCKOUTS

U. S. Bureau of Labor Statistics has been publishing statistics of industrial disputes since 1916. Prior to 1926 such publications had been made quarterly and annually but beginning with November, 1926, a change was made to a monthly basis. In compiling this information the Bureau has not attempted to distinguish sharply between strikes and lockouts as this distinction is often impossible to draw.

Fewer Disputes.—As shown by the data published by the Bureau, the number of disputes in the United States for the past few years has been at a low level. Thus, in 1926 the number of disputes in which the number of persons involved was reported was only 783 with 329,592 persons affected, or a smaller number than in any other year since the beginning of the Bureau's reports. Preliminary reports for 1927 indicate a still further decline from 1926, the revised figures for the first 9 months of 1927 showing only 536 disputes as compared with 696 in the first 9 months of 1926. The number of workers affected by disputes, however, was very much larger in 1927 than in 1926 owing to the existence of the protracted strike of the bituminous coal miners.

BITUMINOUS COAL STRIKE

A suspension of bituminous-coal mining in certain union districts, notably the Central Competitive Field, embracing Illinois, Indiana, Ohio, and western Pennsylvania, began on April 1, 1927, because of the failure of the conference between representatives of the miners and of the operators to reach an agreement that would follow the old contract which expired at midnight March 31. The operators

demanding wage concessions on the ground that these were essential in order to enable them to compete with non-union fields paying a lower scale, while the union was firm against any reduction. The strike involved directly about 175,000 workers, exclusive of 15,000 men in central Pennsylvania who suspended work July 1, and affected more or less severely mining operations in at least 10 States, namely, Illinois, Pennsylvania, Ohio, Indiana, Arkansas, Kansas, Oklahoma, Missouri, Iowa, and West Virginia.

On October 1, the operators and miners of Illinois reached an agreement under which the mines were to resume operations as soon as possible, paying the old Jacksonville wage scale, while a study was being made of the Illinois mine situation by a commission of four, composed of two executives from the operators and two from the miners. This commission is to report on February 7, 1928, to a joint scale committee of both factions, and its findings will be taken as a basis for a permanent contract next spring. Settlements on a similar basis were also made in October for Iowa, Indiana, and the southwestern district, embracing Kansas, Missouri, Oklahoma, and Arkansas.

At this writing the suspension is still on in the Ohio and western Pennsylvania districts. The efforts of the western Pennsylvania mine owners to operate on a non-union basis led to considerable disorder and many charges and countercharges of illegal and unfair conduct. President Coolidge, in his message to Congress, December 6, recommended that legislation be enacted authorizing the creation of a Federal fuel administration and a board of mediation and conciliation to meet emergencies arising from interruptions in the mining of coal.

OTHER STRIKES

Motion-picture Theaters, Chicago.—A dispute between moving-picture machine operators and theater owners in Chicago as to the number of operators to be employed in one of the theaters resulted in the closing of

some 350 or more theaters, beginning August 29. The owners or exhibitors wanted to employ only two operators in the theater referred to, and the union insisted on the employment of four, which was the number that had formerly been employed in that theater under another management. When the operators' union ordered operators in all Orpheum Circuit theaters to walk out during the afternoon of the 29th the Chicago Exhibitors' Association retaliated by ordering that all motion-picture and vaudeville theaters in the Chicago district belonging to the association be closed at 6 p.m. August 29. This action by the association had the effect of locking out or laying off about 15,000 employees consisting mostly of operators, ushers, musicians, and stage hands. The two last named groups had made certain demands, but no agreement had been reached. The ending of the dispute was announced on September 3. The terms of settlement were not divulged.

Teamsters and Truckmen, New York.—Approximately 6,000 teamsters and truckmen in New York City went out on strike September 7 to enforce their demands for a wage of \$45 per week instead of \$40, \$1.20 per hour for overtime instead of \$1, and a working day of 8 hours instead of 9. This strike caused considerable inconvenience in the trucking of merchandise throughout the city and partially tied up shipping, warehouses, etc. A compromise agreement was reached on September 10, subject to ratification, which allowed a wage increase of \$5 per week, but retained the 9-hour day with no increase in overtime pay. The strike was officially settled September 15.

Coal Miners, Colorado.—In response to the call of the Industrial Workers of the World about 4,000 miners in Colorado struck on October 18 for a "flat scale of \$8.50 a day for all classes of mine workers, a six-hour day and a five-day week." These demands, according to press reports, were posted in the southern territory but no demands were made by the miners in the northern fields. The demands put forth at Aguilar, Col., by the miners' conference held Sep-

tember 4 were for a six-hour day and a five-day week with the Jacksonville scale. Subsequently, however (October 30), at a convention at Lafayette, 22 demands on coal operators of the State were drawn up and adopted. The total number of miners out of work on account of the disturbance is probably much larger than the figure named. The strike was attended by considerable disorder and a number of arrests were made for picketing. On November 4 Governor Adams established a State law endorsement department, provision for which had been on the statute but unused for several years.

Early in November extensive arrests of agitators and strike leaders were made in the southern fields by the new State constabulary, which left the strikers in that zone without leadership, and picketing ceased, at least for the time being, but became more active in the northern part of the State, where a determined drive was made against the Columbine mine in Weld County which continued to operate. The strike leaders on November 21 staged a demonstration against this mine which was attended by fatal consequences, as the advancing mob was fired upon by the mine guards and State police, killing 6 and wounding about 27 of its members. Following this clash the Governor sent State troops to the scene.

Tank-wagon Drivers and Filling-station Attendants, Chicago.—Following unsuccessful negotiations with the Sinclair Refining Co. for a \$15 per month wage increase for tank-wagon drivers and a \$10 per month increase for filling-station attendants, their employees were called out on strike July 8. The same day the Standard Oil Co., Texas Co., Roxana Petroleum Co., Apex Motor Fuel Co., and several other smaller companies locked out their employees, thus making almost a complete tie-up of both filling-station and tank-supply service, and affecting about 3,000 employees throughout the city and suburban districts. A compromise agreement of \$7.50 per month increase for tank-wagon drivers and \$5 per month

for filling-station attendants was effected on July 9.

Building-trades Workers, Maryland.—A recurrence of the old jurisdictional dispute between the Bricklayers, Masons, and Plasterers' International Union of America and the Operative Plasterers and Cement Finishers' International Association occurred on July 12, when approximately 6,000 building-trades workers, members of some 18 locals comprising the Allied Building Trades Council of Baltimore, suspended construction work because of differences as to the right of "bricklayers" to set artificial stone instead of "plasterers." The ending of this disturbance was announced on July 22 with the statement that all men would return to work "on fair jobs," Monday morning, July 25.

Textile Workers, New Jersey.—A protracted strike among the woolen and worsted textile workers of Passaic, N. J., and vicinity which began in January, 1926, at the Botany Worsted Mills was not finally settled until February, 1927. This strike was originally organized and directed by the so-called United Front Committee and at its peak involved between eight and twelve thousand employees. The employing companies refused to treat with the "United Front Committee." Following the withdrawal of the "Committee" as the directing head of the strike and the induction of the strikers into the American Federation of Labor as Local 1603 of the United Textile Workers of America, a settlement was effected with one of the mills on November 11, 1926. This settlement recognized the right of the workers to organize and to bargain collectively, and provided that no discrimination and preference would be shown in employing help; that a closed shop would not be demanded, and that in the event of future trouble the workers will remain at work pending arbitration. More or less similar settlements were made with the remaining mills during the period from December, 1926, to February, 1927.

WORKMEN'S COMPENSATION AND INSURANCE

BY JOHN B. ANDREWS

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LEGISLATION

General.—During the year 1927 the Federal Congress and the legislatures of all but four of the states, territories and insular possessions held regular sessions. Important legislation was enacted in the fields of workmen's compensation, rehabilitation, and old age pensions. Unemployment insurance bills were introduced in two or three legislatures. Establishment by private employers of various types of pension systems for their employees increased and a growing interest was shown by private insurance companies in group insurance.

Of outstanding importance was the enactment by Congress in the final days of its sixty-ninth session of a law providing accident compensation to longshoremen and harbor workers for injury not covered by the various state compensation laws. Congress also, by amendment of the Federal Employees' Compensation Act, raised the minimum and maximum monthly benefits from \$33.33 and \$66.67 to \$53.33 and \$116.66 respectively, an increase urgently needed as the former limits were based upon pre-war wage rates. Thirty-four state legislatures liberalized compensation laws by more or less important amendments. South Carolina accepted the provisions of the Federal Vocational Rehabilitation Act, thus becoming the forty-first state to cooperate with the Federal Government in rehabilitation of persons injured in industry. Maryland and Colorado enacted old age pension laws similar to those already in force in several states.

Longshoremen's Compensation.—The Federal Longshoremen's Act is the reward of ten years of effort since 1917 when the Supreme Court of the United States, by a five-to-four decision, ruled that workmen when injured on shipboard were outside the jurisdiction of the state and therefore entitled to redress only under the Federal maritime law which

necessitates suits for damages. Twice since then Congress has legislated to bring workers injured on vessels at the docks under the state laws, but in both instances the Supreme Court, again in divided opinions, declared the acts unconstitutional. The present law supplies a comprehensive Federal remedy, as finally suggested by the Court. It is the first Federal compensation law to cover private employees and opens the way to similar protection for railroad employees engaged in interstate commerce and other employees, such as seamen, who are denied the protection of state laws. By affording protection to a large number of workers in the five states, North Carolina, South Carolina, Florida, Arkansas and Mississippi, which still lack local workmen's compensation laws, it should by example serve as a stimulus to such legislation.

The longshoremen's compensation law covers all workers upon navigable waters, including dry docks, except masters and crews of vessels, workers unloading or repairing vessels under eighteen tons and government employees. The law went into effect July 1 and is administered through fourteen local Federal deputies, cooperating with the state compensation officials, under the unifying supervision of the experienced United States Employees' Compensation Commission. It is liberal in its provisions, embodying the best features of existing workmen's compensation acts. The basis of compensation is two thirds of wages, payable after a waiting period of seven days, with all necessary medical care. Dependent children receive compensation until eighteen years of age and widows until death or remarriage. The weekly maximum payment is \$25. Modern provision is made for accident prevention and cooperation in rehabilitating disabled workmen.

State Laws Amended.—Of the thirty-four jurisdictions which

amended workmen's compensation laws, the most extensive advances were made by Alaska, Kansas, Michigan and Pennsylvania. Maryland and Wisconsin took pioneer action by extending workmen's compensation to convicts. Though the obligation of the state toward its wards would seem to be greater than toward free labor, because they are less able to secure by their own action the necessary measures of protection, yet prior to the enactment of this year's legislation by Maryland and Wisconsin, a convict injured in prison or in prison industry was entitled to no compensation and in some cases re-entered civil life seriously handicapped by loss of members or other major injury.

Illinois, Maryland and Michigan joined the growing list of states which provide extra compensation for minors illegally employed. Idaho created a second injury fund to supplement compensation to partially disabled employees who by second injury become totally disabled. Idaho thus becomes the eighth state to solve a difficult problem by freeing the employer of extra risks in employment of partially disabled persons and, thereby, partially relieving such persons of their handicap in obtaining work.

Alaska raised compensation during temporary disability from 50 per cent to 65 per cent of wages and made a corresponding increase of fully 15 per cent in benefits for all cases of death or permanent disability, raising the total maximum payment from \$7,800 to \$9,000. All compensation is to bear interest at 8 per cent from six months after injury until paid. Every beneficiary is entitled to a lien for full amount of compensation, equal in rank to liens for wages and material, upon all property connected with the work performed by the employee at the time of injury. Kansas made important advance in administration of her workmen's compensation law by vesting it in a commission, instead of the courts, requiring employers to insure with authorized companies or to become self-insurers, and providing adequate state regulation of insurance compa-

nies and rates. Compensation for loss of members was raised from 50 to 60 per cent of wages for the scheduled number of weeks. The maximum weekly payment was increased from \$15 in total and \$12 in partial disability to \$18 in both classes of injury. The maximum death benefit was raised from \$3,800 to \$4,000. Among other provisions liberalized were those for lump sum settlements, medical care, funeral benefits and coverage of certain classes of employees.

Michigan raised compensation from 60 to 66 $\frac{2}{3}$ per cent of wages, the weekly maximum payment from \$14 to \$18 and the total maximum payment for disability from \$7,000 to \$9,000. Minors illegally employed were brought under the act, and for those between sixteen and eighteen years of age double compensation was provided.

Pennsylvania reduced the waiting period from ten to seven days, raised compensation from 60 to 65 per cent of wages, the weekly minimum and maximum payments from \$6 and \$12 to \$7 and \$15 respectively, and the total maximum payment from \$5,000 to \$6,500. Corresponding increases were made in death benefits. Awards are to bear interest at the rate of 6 per cent from the time they are due until paid.

Non-Resident Alien Dependents.—It should be noted that all these jurisdictions, Alaska, Kansas, Michigan and Pennsylvania, and the State of Washington, while liberalizing their laws in other regards, increased discriminations against non-resident alien dependents. Alaska reduced such death benefits from 75 per cent of regular awards to 60 per cent for wife or minor children and 50 per cent in other cases. Michigan reduced such benefits from regular to two-thirds of regular award, and the other states made minor discriminating provisions.

DISABILITY PAYMENTS

Rates Increased.—Other states which raised the weekly maximum payment were New York, in cases of total disability, from \$20 to \$25, Connecticut in death cases, from \$18 to \$21, Massachusetts, in all cases

from \$16 to \$18, and Tennessee, from \$12-15 to \$16. Indiana and Wisconsin raised the maximum wage upon which compensation is computed. New York and Massachusetts also increased total maximum payments. Compensation for loss of certain members was increased in Rhode Island, Connecticut, Illinois and Wisconsin. Connecticut also raised funeral allowance from \$100 to \$200. Maximum medical and hospital benefits were increased in South Dakota and Vermont, while Washington created a fund to provide services needed after expiration of employers' contracts with physicians and hospitals.

Employee Coverage.—Massachusetts extended coverage to employees working outside the state and Delaware, Texas, Tennessee, Oregon and Minnesota to certain classes of public employees. Massachusetts took a backward step in allowing employees peculiarly susceptible to injury to waive their right to compensation for disability, and Connecticut extended a similar provision to cover death benefits to dependents. In Oregon and North Dakota, insurance companies subjected legislatures to pressure for abolition of exclusive state insurance funds. In Oregon the attack was wholly unsuccessful and in North Dakota was defeated by the Governor's veto. North Dakota, however, was prevailed upon to limit maximum total payment in cases of death or total permanent disability to \$15,000, with certain exceptions.

REHABILITATION

Federal and State Cooperation.—With South Carolina's acceptance of the provisions of the Federal rehabilitation act, all but seven states, Connecticut, Delaware, Kansas, Maryland, Texas, Vermont and Washington are cooperating with the Federal Government in rehabilitation of persons injured in industry. The investigating commission, authorized by the 1924 session of the Maryland legislature, early in 1927 submitted its report on vocational rehabilitation of civilians, recommending legislation to establish a state bureau of rehabilitation of the physically handicapped and to accept the provisions of the

Federal act. A bill embodying these recommendations passed the Lower House of the Legislature but was killed in the Senate.

Federal action was inaugurated in 1920, after Congressional interest had been aroused by the rehabilitation of military cripples, and social welfare workers had organized a strong demand for extension of this work to persons injured in industry. The prompt acceptance by a large majority of the states of the provisions of the Federal law which provides matched appropriations by state and Federal governments, and the "evolution, scope, organization and administration of the program of vocational rehabilitation of disabled persons," is outlined in a 98-page illustrated bulletin recently issued by the Federal Board for Vocational Education ("Vocational Rehabilitation in the United States," *Bulletin No. 120*).

At the national conference on vocational rehabilitation, held in Cleveland in 1925, the interrelation of workmen's compensation and rehabilitation of industrial cripples was discussed. "The rehabilitation effort," said Dr. R. M. Little, chief of the New York State Bureau of Rehabilitation, and former member of the United States Employees' Compensation Commission, "developed immediately out of workmen's compensation and would never have come to pass without that influence. . . . The rehabilitation service should be closely related to workmen's compensation. From the compensation officials come reports of most of our clients. Rehabilitation does not start when compensation leaves off, but they overlap; therefore the two services should be dovetailed together."

An illustration of the advantage of such cooperation is shown in the question of maintenance for injured persons during their period of rehabilitation. The provisions of the Federal law forbade use of appropriations under it for such maintenance, and thus barred some of the neediest cases from its benefits. Several states have solved this problem by providing under their workmen's compensation laws for a limited

maintenance allowance in addition to compensation, while others have made similar provisions by other state laws. Rhode Island this year became the tenth to enact such legislation, while Montana increased maintenance allowance which was first provided in 1925. A number of states have extended their rehabilitation facilities to all "physically handicapped" children, with cooperation of educational and child welfare organizations. Wisconsin and California this year made notable advance in this direction by providing transportation, special schools and instructors and liberal increase of appropriation.

OLD AGE PENSIONS

State Enactments.—In 1927 Maryland and Colorado joined Alaska, Montana, Nevada, Wisconsin and Kentucky in legislation providing old age pensions for worthy and needy aged persons whose citizenship and residence are of long standing. Both laws are of the optional type, depending upon acceptance by the various county or city authorities. Maryland sets the age limits of pensioners at 65 and Colorado at 70 years. Both provide a maximum benefit of one dollar per day, a minimum United States citizenship and state residence of fifteen years, and other standard limitations. Appropriations are to be made by each county or city and administration is through local courts or the city governments in cooperation with existing state officials or boards.

Need for Aid to Indigent.—Though these laws are admittedly inadequate, there is no question as to the growing need and popular approval of legislation to provide care for aged indigents in their own homes rather than in institutions which are at best uncongenial and in most cases uncomfortable and expensive. Old age pension bills were introduced in two dozen legislatures in 1927. Wyoming passed a bill which was vetoed by Governor Emerson, who, however, explained that his action was only because of an unusual amendment inserted in the bill which he believed would render it unconstitutional, and that he will support at the next leg-

islative session a bill that is in its "proper form." In six states—Idaho, Indiana, Nebraska, Texas, Utah and Washington—the bill passed one house of the legislature. In 1926, the Washington Legislature had by a large majority passed an old age pension bill which Governor Hartley vetoed. In 1927, the Senate repassed the bill over the Governor's veto, but opposition forces prevented the required two-thirds affirmative vote in the House.

Public sentiment for old age pension measures is growing. Arkansas, California and Iowa authorized investigating commissions while New York continued the one initiated in 1926, making a brief preliminary report. In Pennsylvania alone the way was definitely blocked against early adoption of an old age pension law. The Pennsylvania act of 1923 was held unconstitutional because of an unusual provision in the state constitution. The legislature of 1925 adopted a joint resolution to amend the constitution so as to permit this legislation. It was necessary for the legislature of 1927 to do likewise before the amendment could be submitted to the voters. The proposal passed the Senate but the "machine" massed its forces and the House "under the lash" killed the bill. There is now no way of submitting the constitutional amendment to the people before 1933. Public interest in the measure lives, however, and the Pennsylvania commission continued its work by the publication early in 1927 of a report, summarizing the old age pension movement in the United States and foreign countries.

On December 8, 1927, in the opening days of the Seventieth session of Congress, a bill similar to that of the Canadian non-contributory old age pension law was introduced by Representative Sirovitch of New York. In providing matched appropriation by the Federal Government and states which accept the provisions of the act, it follows the Shepard-Towner Maternity Act and the Vocational Rehabilitation Act, already proved highly successful and beneficial in results. In the field of retirement pension system for public

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employees, Illinois, New Jersey, Ohio and Pennsylvania enacted important liberalizing provisions, and the United States Bureau of Labor Statistics completed a study of the various state systems which is published in its *Monthly Labor Review* of December, 1927.

COGNATE SOCIETIES

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| <p>AMERICAN ASSOCIATION FOR LABOR LEGISLATION.—131 E. 23rd St., New York, N. Y.</p> <p>AMERICAN FEDERATION OF LABOR.—Washington, D. C.</p> <p>AMERICAN FEDERATION OF MUSICIANS.—239 Halsey St., Newark, N. J.</p> <p>INTERNATIONAL ASSOCIATION OF GARMENT MANUFACTURERS.—395 Broadway, New York, N. Y.</p> <p>INTERNATIONAL ASSOCIATION OF MACHINISTS.—799 Broadway, New York, N. Y.</p> <p>INTERNATIONAL LONGSHOREMAN'S ASSOCIATION.—500 W. 30th St., New York, N. Y.</p> <p>INTERNATIONAL SEAMEN'S UNION OF AMERICA.—359 N. Wells St., Chicago, Ill.</p> <p>INDUSTRIAL WORKERS OF THE WORLD.—32 Second Ave., New York, N. Y.</p> <p>JUNIOR ORDER OF UNITED AMERICAN MECHANICS.—207 City Center Bldg., Philadelphia, Pa.</p> <p>LABOR DEFENCE COUNCIL.—108 E.</p> | <p>14th St., New York, N. Y.</p> <p>LEAGUE FOR INDUSTRIAL DEMOCRACY.—70 Fifth Ave., New York, N. Y.</p> <p>MARINE ENGINEERS' ASSOCIATION.—116 Broad St., New York, N. Y.</p> <p>MASTERS', MATES' AND PILOTS' ASSOCIATION.—116 Broad St., New York, N. Y.</p> <p>NATIONAL ASSOCIATION OF LETTER CARRIERS.—19 Massachusetts Ave., Washington, D. C.</p> <p>NATIONAL CIVIC FEDERATION.—1 Madison Ave., New York, N. Y.</p> <p>NEPTUNE ASSOCIATION OF MASTERS AND MATES OF OCEAN AND COASTWISE STEAM VESSELS, INC.—21 Pearl St., New York, N. Y.</p> <p>NATIONAL FEDERATION OF POST OFFICE CLERKS.—American Federation of Labor Bldg., Washington, D. C.</p> <p>NATIONAL INDUSTRIAL CONFERENCE BOARD.—247 Park Ave., New York, N. Y.</p> <p>NATIONAL INDUSTRIAL COUNCIL.—50 Church St., New York, N. Y.</p> |
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DIVISION XVI

IMMIGRATION AND RACES

RACE CONDITIONS IN THE UNITED STATES

BY HARRY H. LAUGHLIN

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RACIAL COMPOSITION

At the present time the most interesting development in the consideration of race conditions in the United States is not the composition of the whole population by major races—black, yellow, white, red—nor of nationality of aliens, but of portions of different European racial bloods found in the white stock of the United States. One of the most important features in any nation's history is the turnover of racial blood from generation to generation. Of course it is vastly essential that within the particular racial stocks, whatever they may be, family strains of a high order of soundness and ability be maintained, but for the present it is sufficient to consider racial stocks.

No census of the country has ever analyzed the European descent of our native white stock in such a manner as to be able to show that such and such a percentage of the blood of the American people at a particular date was derived from a given European nationality. The census shows the percentage of each primary race—white, yellow, black and Indian peoples—and the relative portions of native and foreign-born persons, and the secondary racial classification, or the national origins of aliens in the country, but when the melting pot gets to working and the native-born white, even of foreign-born parents, comes on the scene, then the mixture is such that it has not yet been analyzed. It is obviously the task of future censuses of the

United States to secure data which will give the answer to the question: At this particular time, what is the racial make-up of the whole people by percentages of primary and secondary racial stocks, regardless of the mixture in different individuals?

CENSUS RECORDS

Of course the official records of the Federal Census and of the immigration service are the basic materials for the study of this problem for past generations. But such stock must be supplemented by a great deal of historical research. Mere counting is important, but the greatest value of the census has come to lie in the analysis of racial, social and economic conditions while enumerating the people. Since 1850 the census has enumerated aliens by country of birth. Since 1890 the census has listed children of foreign-born parents by nationality of such parents; and since 1910 the census has listed native whites of foreign-born and of mixed parentage, and foreign-born whites, by mother tongue.

While censuses can provide the data in the future, it remains a task for demographic and eugenical research to work out these percentages of primary and secondary racial stocks which have composed the American population at each generation since the foundation of the country. If we begin with 1630 as generation one, then rate one generation as thirty years, the "generation dates," suitable for this study, would be 1630,

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1660, 1690, 1720, 1750, 1780, 1810, 1840, 1870, 1900, and so on. Research must find, by laborious methods, the racial make-up of the whole body of white Americans for each of these designated generations since the founding of the country. Thus, only, can we picture properly the racial turnover—due to differential birth rate, migrations and such additions to the citizenry by territorial annexation—in the sequence of human generations in our national history, and thus be armed with the first group of data essential to guiding our future racial trend.

RACIAL FORCES

The control of population by immigration, and the laws, and particularly the customs, of a country which govern mate selection, and the economic and social factors which affect differential birth rate, are the forces which a nation must use if it is to influence the racial make-up of its future population. Every nation must have a racial ideal, as well as high ideals for soundness and talent in family stocks within its particular racial limits. The people of the United States, while they are still recruiting extensively from foreign stocks, have established enough homogeneity, or at least have a fine enough prospective mosaic, in their population to permit an attempt to define the American race. For the white section of the population the American race is a mosaic—in different sections still varying greatly in fineness—of European racial stocks.

It has been shown by experiment that the most practical and feasible way to determine the racial make-up of a given group of people is to secure, as nearly as possible, the racial descent of each of the four grandparents of the particular person. Thus, regardless of mixture in the individual, a better picture of racial stocks is found by using four parts instead of one in the individual mosaic. This reduces the chance of error, and makes possible a much finer and accurate enumeration of blood in the constituent population

than would be possible by designating with one racial name the principal descent of the individual. This method has been tried out successfully in two recent eugenical researches: First, Frank L. Babbott, President of the Eugenics Research Association, found, in applying this method to the members of the Constitutional Convention of 1787, the blood composition, by per cent, of 55 members who attended, regardless of combinations in the different individuals, to be as follows:

1. English	63.63
2. Irish	17.27
3. Scotch	9.09
4. French	4.55
5. Dutch	2.73
6. Swedish	1.89
7. Welsh .....	.91

He then made a similar study of the 96 members of the United States Senate of the Sixty-ninth Congress, and, following the same methods, found percentage, by race, as follows:

1. English	47.65
2. Scotch	19.53
3. Irish	14.45
4. German	5.60
5. French	5.21
6. Welsh	2.86
7. Swedish	2.08
8. Norwegian	1.56
9. Dutch .....	.52
10. Swiss .....	.26
11. Danish .....	.13
12. American Indian .....	.13

Second, H. H. Laughlin, in collaboration with the Committee on Immigration and Naturalization of the House of Representatives, is now bringing to a successful head a study of the racial descent of each of the 11,244 patentees who were issued patents by the United States in the first quarter of the calendar year 1927. The findings of this research will be published during the year 1928. The experience of this latter study shows that, without greatly increasing the labor of census taking, a good mathematical determination could be made of the primary and secondary racial stocks found in the American population by the census of 1930. If Congress would provide for such a determination by the next census, a great advance would be made toward a better understanding of our racial

RACE CONDITIONS IN THE UNITED STATES

stocks, and it would remain for further governmental or private research to restore parallel data for each of the previous generations since the founding of the country.

This would, of course, involve great labor, but a recent study made by John Trevor, called "National Origins," has worked out in a very satisfactory manner the approximate primary and secondary racial percentages in the American people for 1920. This was done in order to supply Congress with satisfactory data for basing an immigration quota law, not on the number of aliens in the country, but, more logically, on the racial composition of the whole white people. By turning Captain Trevor's figures into percentages, we find the following "constituent blood" in the American people in 1920:

1. Great Britain and North Ireland	48.95
2. Germany	11.52
3. Black	8.33
4. Irish Free State	4.79
5. Canada	3.31
6. Italy	3.28
7. Poland	2.61
8. Russia	2.30
9. Sweden	1.77
10. Netherlands	1.59
11. Mulatto	1.57
12. Austria	1.25
13. Norway	1.18
14. France	1.02
15. Hungary .....	.85
16. Czechoslovakia .....	.78
17. Mexico .....	.76
18. Denmark .....	.55
19. Switzerland .....	.45
20. Yugoslavia .....	.34
21. Finland .....	.29
22. Lithuania .....	.27
23. Indians .....	.23
24. Latvia .....	.22
25. Greece .....	.22
26. Estonia .....	.19
27. Belgium .....	.14
28. Portugal .....	.14
29. Rumania .....	.13
30. Japanese .....	.11
31. Spain .....	.09
32. Syria .....	.08
33. West Indies .....	.07
34. Chinese .....	.06
35. Luxemburg .....	.05
36. Armenia .....	.04
37. Australia .....	.03
38. Central and South America .....	.03
39. Newfoundland .....	.03
40. Turkey .....	.02
41. Danzig .....	.02
42. Albania .....	.01
43. New Zealand and Pacific Islands .....	.01

44. Iceland .....	.01
45. Palestine .....	.01
46. Bulgaria .....	.01
47. All others .....	.29

ANALYSIS OF RACIAL ORIGINS

The Immigration Act of 1924 provided for an official commission consisting of the Secretaries of State, of Commerce, and of Labor, to determine, "as nearly as may be" for use in a presidential proclamation assigning immigration quotas, the composition of the American people according to national origins. This commission recognized the difficulties of the matter, and Dr. Joseph A. Hill, of the Bureau of the Census, in a hearing before the House Committee on Immigration on January 18, 1927 (National Origins Provisions of the Immigration Act of 1924), explained the method followed by the experts of the Presidential commission. The congressional requirement, however, called for determination "as nearly as may be." The experts attached to the Presidential commission, in their report to the commission, said:

"It is to be noted, however, that so far as the provisions of the Immigration Act of 1924 are concerned, an exact classification is neither expected nor required, for the act says that the determination of national origin shall be made 'as nearly as may be.' Your board believes that the results finally obtained, after such revisions as it may make within the next two or three months, will indicate the national origin of the population of the United States as nearly as may be ascertained with the available data and under existing conditions. A greater degree of accuracy could doubtless be obtained by a careful and exhaustive study of historical and genealogical records; but that is a task which might take several years for its completion and would require the assistance or cooperation of historians and experts in historical or genealogical research."

The table on the next page gives the comparative values computed by Captain Trevor and by the Presidential commission.

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	Captain Trevor's Computa- tions	Presiden- tial com- mission's Computa- tions
Albania	100	.....
Austria	2,171	1,485
Belgium	251	410
Bulgaria	100	.....
Czechoslovakia	1,359	2,248
Denmark	945	1,044
Estonia	325	.....
Finland	517	559
France	1,772	3,837
Germany	20,028	23,428
Greece	384	367
Hungary	1,521	967
Great Britain and North Ireland	85,135	73,039
Irish Free State	8,330	13,862
Italy	5,716	6,691
Netherlands	2,762	2,421
Norway	2,053	2,267
Poland	4,535	4,978
Portugal	236	.....
Rumania	222	516
Russia	4,002	4,781
Spain	148	674
Sweden	3,072	3,259
Switzerland	783	1,198
Turkey in Europe....	100	233
Yugoslavia	591	777
All others	2,842	4,500
Total.....	150,000	153,541

Results.—Both Captain Trevor's method and that followed by the Presidential commission made use of the census data for 1920, so far as such data move in the direction of the desired analysis. Then, each used the previous records of population growth and of migration. The methods were slightly different, but in the long run their results approximate each other as nearly as would be expected in the first attempts to analyze so intricate a situation. No doubt future research will secure results approximately like those now found, but doubtless more accurate than either. There is something, too, to be said in favor of the proposition to begin a national origins analysis with the date 1630 and, by research, to bring the study down to date by successive generations. The independent research analysis for each generation would have to fit in with the whole general trend of racial turnover, and would thus serve as a valuable check on accuracy for the computations for the whole series.

While the Presidential commission

of cabinet members, assisted by experts, made this computation of "national origins," they stated that they could not vouch for the accuracy of the figures. Following up this opinion, and pending a more satisfactory determination, the Congress of the United States postponed the application of national origins until July 1, 1928. It seems, however, that by using either the cabinet study or the figures determined by John Trevor, the approximate truth would be followed, and that for a practical basis in applying national origins there need be no longer delay for fear of gross inaccuracy.

Bearing on Quota Law.—The national origins basis for our immigrant quotas would recruit to our present racial composition in fair proportion of each present racial element, whereas, with much less reason, the present quota law recruits to our population, not in accordance with its whole composition, but in accordance with the number of aliens who happen to be here at a given date. The principle of recruiting immigrants according to national origins seems sound, but the Congress was not satisfied that the basic data were exact. No census had been taken showing national origins; therefore the figures had to be secured by a hurried demographic research. The law which would have put the quota basis for immigrants by national origins into effect on July 1, 1927, was based on the assumption that it would be possible, by research, to compute the correct figures, "as nearly as may be." Such research seems to have resulted in fairly satisfactory values, and doubtless, with the experience now gained in such research, future studies, with more resources, which would make possible a more thorough and a more systematically organized and executed research, would approximate the facts still more accurately.

IMMIGRANT DISTRIBUTION

Quota Formula.—If the immediate practical purpose of the determination of the racial composition of the American people is to find a working basis for quota distribution of im-

migrants by country of origin, then either the Presidential commission's computation or that of Captain Trevor is accurate enough. However, the search in the future must refine both of these, and extend the study through all preceding generations since the founding of the country. But the findings as already worked out are reliable enough for the immigration formula.

The purpose of an immigration formula is to make an equitable distribution of immigrants among countries in such a manner as to avoid arbitrary assignment of numbers to each nation, although such a procedure is entirely within the power of Congress. When the nation determines approximately what number of each of the several alien races it desires to admit annually, it must then cast about to find a formula to satisfy its purpose—a formula which will admit the desired numbers by nationality, and which will let impersonal conditions rather than arbitrary assignments decide the particular values. There is plenty of precedent for this.

RACIAL CLASSIFICATION

Race Categories.—In reference to data desired on racial composition of the people, it is well first to consider the major classification. Within the white race, which is a primary category, the secondary categories, not of groups, such as Nordic and Mediterranean, but of races, such as English, Irish, Spanish, North Italian, Jewish and Flemish, should be listed. Later, if desired, the racial groups between the primary and secondary racial categories could be computed by simple addition. With the Negro race the problem is somewhat different. It is known that Negroes came mainly from the West Coast of tropical Africa, but many of them originated in racial stocks showing great range

in hereditary traits, but their history has been lost and its restoration by historical research, if possible, would be many times more difficult than restoring the secondary racial composition of the white portions of the population. For the present purposes of analysis Negroes can be treated as one primary group, and the secondary classifications should concern the percentages of white blood in the mixed groups. With the yellow races the matter is relatively simple, because we have recorded our small fraction of yellow population by nationality. With the American Indian the historical records have been well kept, so that classification by tribes, which would be comparable to the different European nationalities within the white race, is possible.

But for the present purpose, the big problem is to provide for the white population of the country an analysis by secondary races, such as English, German, Russian and the like. Blood or racial classification is the thing desired. Supplementary classifications by nationality, by country of birth, by religion, and by native tongue, are useful, but such ratings should be used only to throw light upon the matter of biological racial make-up.

It must be granted that within each of the secondary European races, such as French, English, Greek, these races in turn are mosaics, being far from uniform within themselves in their descent and in their present composition, although when compared with their neighboring races, each enjoys a certain degree of uniformity. Within a few centuries, each can trace the racial origins in its own melting pot to diverse stocks, and so the record of migrations, of differential fecundity, working out in the turnover of population in the countries of the world, has gone on from time immemorial.

XVI. IMMIGRATION AND RACES

PROBLEMS OF IMMIGRATION

By ARTHUR E. COOK

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THE GENERAL SITUATION

The statistics on immigration for 1927 show a marked improvement in results. The duties devolving on the Immigration Service are constantly increasing and are being met with a degree of success that is most gratifying. A number of interesting developments have occurred during the year. One of these developments amounts to a startling disclosure in showing what becomes of large numbers of aliens after their arrival in the United States.

DISTRIBUTION OF ALIENS

In Institutions.—During 1927, a survey was made of the alien inmates of penal institutions, insane asylums, hospitals, and poorhouses throughout continental United States, Alaska, Porto Rico, and Honolulu in Hawaii. That survey shows that in prisons, penitentiaries, and jails there were found to be 45,193 aliens; insane asylums and other institutions for the care of such cases were found to harbor 37,470; hospitals and the like contained 14,383; and poorhouses, etc., contained 16,059. This gives a grand total of 113,105 aliens who have found their way into public institutions in this country.

The great majority of these aliens cannot be deported, for the reason that the statutory period within which deportations of aliens can be effected has expired. The greater portion of these aliens did not become public charges until after they had been in the country for a sufficient period of time to prevent deportation.

Spread Between Town and Country.—For many years past the country deprecated the fact that the great majority of immigrants, though ostensibly of the peasant and farmer type, did not upon their arrival in the United States proceed to the farming sections of the country and take up agricultural pursuits but, instead, concentrated in business and

industrial centers. Statistics seem to indicate a welcome change in this situation. It appears that the newcomers are spreading more evenly throughout the country than ever before. However, the State of New York still leads all others as the central settlement for immigrants. The improved situation is particularly reflected in the following figures: during the past fiscal year there were 90,000 immigrant aliens admitted who gave New York as their destination, while 26,000 from that State were recorded as emigrating. Massachusetts received 26,000, Michigan 28,000, and Texas, a distinctively agricultural state, received 40,000. California, also an agricultural state, received 20,000. These states lost in emigration less in proportion than New York State. The Southern states, as usual, neither gained nor lost to any marked degree.

IMMIGRATION LAWS

Codification Urged.—Only by experience in administration and observation of the operation of statutes covering a general policy can the defects of the system represented be discovered. There are at present numerous statutes governing the admission, residence and expulsion of aliens. Constant amendments in minor particulars and the passage of additional laws to cover special circumstances have made the system of alien laws difficult of operation and, except for those working constantly under them, as difficult to understand. Some of the older provisions might well be repealed as being unnecessary or obsolete, because the objects of their passage are amply protected by newer and better laws. In addition to legislation relating solely to aliens, other laws which mainly concern other subjects contain provisions which require attention in the administration of alien acts. These include the Seamen's Act and the White Slave Traffic Act, narcotic

laws and others. Some of the more important examples of scattered legislation dealing solely with aliens are the General Immigration Act of 1917, the Quota Act of 1924, the Act of 1918 to exclude and expel from the United States aliens who are members of the anarchistic and similar classes, and the Chinese exclusion laws.

Chinese Exclusion Act.—Apparently the only real obstacle to the codification of all immigration laws is the consolidation of the Chinese Exclusion Act with the general immigration statutes, but in view of the highly restrictive provisions of the Act of 1924 as applied to Asiatic peoples, a separate law for the Chinese, in the opinion of the Department of Labor is no longer a necessity, and in fact, the Department states the present Chinese act has to some extent become detrimental in the matter of regulating immigration from that country. A draft of a code containing only the provisions of the present existing laws was furnished, during the year, to the Committee on Immigration and Naturalization of the House of Representatives by the Department of Labor for its consideration.

NEEDS OF AMERICAN INDUSTRY

A certain amount of selection is practiced under the Quota Act of 1924 in that that law exempts or gives preference to certain relatives of American citizens, and in the case of quotas of not less than three hundred a preference for immigrants skilled in agriculture. Consideration of family preferences was discussed in THE AMERICAN YEAR BOOK for 1926. Other than the preferences for agricultural labor, there is nothing in the present quota system to aid American industry. While exemption from the Contract Labor Law may be secured upon application to the Secretary of Labor when it is shown that a need for the skilled labor which cannot be secured in the United States exists, since no exemption from or preference in the quota is granted to such skilled labor, little benefit can accrue to the industries seeking to import such needed labor.

The prompt importation of such workers when needed means the opening of new opportunities for American workmen because, with the assistance of these trained workers, American labor is trained to new processes and in new industries, and will get the benefit of the additional opportunities for employment. The absence of one skilled worker for a key position in a continuous process may mean the lack of employment for a hundred others, when the continuity of the process is broken.

EXAMINATION OF ALIENS ABROAD

Service Extended.—In prior issues of THE AMERICAN YEAR BOOK, reference has been made to the stationing of competent immigrant inspectors and Public Health surgeons in foreign ports to examine prospective immigrants to the United States. During the year 1927, in addition to those countries mentioned in the last YEAR BOOK, this advisory service for examinations abroad has been extended to Germany, Norway, Sweden, Denmark, Belgium, Poland, The Netherlands and Italy.

Results.—The results of these examinations abroad, now representing by far the greater portion of immigrants arriving at the Port of New York are shown in the following statement of rejections there:

Fiscal Year	Number of Applicants	Debarred	Per Cent of Applicants Debarred
1922.....	279,638	3,898	1.4.
1923.....	389,497	4,110	1.1
1924.....	419,428	6,370	1.5
1925.....	241,318	2,997	1.2
1926.....	270,074	1,544	.6
1927.....	299,112	1,319	.4

Confronted with such concrete results, the success of the plan seems permanently established, and should it become universal in its application it is not unreasonable to believe that only in extremely rare incidents will exclusion of European aliens occur, a condition of affairs which should be pleasing to all those who have the interests of our country and the welfare of the immigrant at heart.

XVI. IMMIGRATION AND RACES

ALIENS INELIGIBLE TO CITIZENSHIP

Case of Citizen's Wife.—There was written into the Quota Act of 1924 a provision barring from the United States any alien (with a few exceptions) ineligible to citizenship. No exemption from this bar is granted in favor of the wife of an American citizen. Such an exemption is provided in the Chinese exclusion law for wives of merchants, but the American citizen is denied similar consideration. This situation has been referred to Congress for correction.

American Indians. — Likewise, North American Indians, not being by law entitled to naturalization because not of the White Race, or of African nativity or descent, are denied the privilege of entering the United States for residence unless actually born within this country. Considerable comment has been made on this effect of the law, especially as it affects North American Indians who reside close to the Northern Border and who have been for many years accustomed to crossing and considered that a privilege under the Jay treaty. Recommendation was made to Congress by the Secretary of Labor that members of those tribes of American Indians whose original domain consisted of territory in the United States and Canada should be permitted to migrate to this country.

ILLEGAL ENTRANTS

The Border Patrol is becoming increasingly more effective in preventing surreptitious entry of aliens crossing the Borders. Nevertheless, with but a few more than seven hundred patrolmen to guard five thousand miles of borderline twenty-four hours a day, a considerable amount of alien smuggling must be expected.

Want of Safeguards.—However, probably more serious a problem is presented through lack of safeguards in the immigration laws to prevent immigrant aliens from entering under other than immigrant status. One of the fruitful sources for thus gaining admission is that provided by the Seamen's Law when alien seamen take shore leave, as they are permitted to do. By coming as a

part of a ship's crew, therefore, unless an immigrant inspector discovers fraud in connection with the employment of such alien on board ship, it is possible to evade inspection.

Tourists Pretexts.—Because of the comparative ease with which bona fide visitors and transients can visit and pass through the United States, large numbers of aliens who really intend to remain in this country seek this apparently easier path of entry into the land of their dreams. Many instances of fraud, at the time of application, and a considerably larger number after entry, have been discovered.

Stowaways are, of course, another class endeavoring to arrive by surreptitious means. The Department of Labor recently uncovered an instance of collusion between stowaways and members of a steamship crew of a vessel plying between the United States and South American and Island ports. In this instance nineteen aliens were found in the oil tanks of the steamer and only the timely arrival of immigrant inspectors and their immediate release saved the lives of the clandestine passengers from suffocation. Attempts to enter the country as stowaways have increased gradually under the quota system. During the past eight years, 1920-1927, 19,085 stowaways have been found on vessels arriving at American ports, the annual average being 2,386. The annual average just prior to the World War was only 613.

DEPORTATIONS

Official records show a continued increase in the number of aliens deported by the United States, 12,055 being returned during the past year. In addition to these formal deportations, there were 14,619 departures upon request when unlawful presence was discovered, making more than 26,000 which should be recorded as practical deportations during the year.

Deportation alone as a punishment for illegal entry into the United States appears to be not sufficient detriment for repetition of the act. Making the act of illegal entry a

THE QUOTA SYSTEM

criminal offense is suggested as a remedy. One of the first activities scheduled by the Committee on Immigration and Naturalization of the House of Representatives for 1928 is the holding of hearings on a proposal for codification and amendment of deportation laws. This legislation contemplates the imposition of more drastic penalties.

THE QUOTA SYSTEM

By HARRY E. HULL

COMMISSIONER GENERAL OF IMMIGRATION, DEPARTMENT OF LABOR

LEGISLATION

Amendatory Acts.—The restrictive Immigration Act of 1924 has been amended by the two Acts of May 26, 1926, the Act of July 3, 1926, and the Act of March 4, 1927. One of the Acts of May 26, 1926, is entitled "An Act to admit to the United States, and to extend naturalization privileges to, alien veterans of the World War"; and the other is entitled "An Act exempting from the provisions of the Immigration Act of 1924, certain Spanish subjects residents of Porto Rico on April 11, 1899." The former Act provided for a non-quota status under certain limitations to an "alien veteran"; to an unmarried child under 18 years of age, to the wife, or the husband of an "alien veteran," provided the immigration visa issued before the expiration of one year after the enactment of said act. The other Act of May 26, 1926, provided for the admission to Porto Rico of certain Spanish subjects without regard to the Immigration Act of 1924, except Section 23, which deals with the enforcement thereof.

The Act of July 3, 1926, amended Section 4(d) of the Immigration Act of May 26, 1924, by adding "an immigrant arriving in the United States before July 1, 1927, who is the wife, or the unmarried child under 18 years of age, of an alien resident of the United States who entered the United States prior to July 1, 1924, and who continuously for at least two years immediately preceding the time of his admission to the United States for permanent residence was, and who entered the United States solely for the purpose of carrying on the vocation of min-

ister of any religious denomination or professor of a college, academy, seminary, or university, if such immigrant is following to join such alien; or".

Section 2 of this amendatory Act conferred authority upon the Secretary of Labor to admit to the United States for permanent residence "any otherwise admissible alien who (1) is the wife or the unmarried child under 18 years of age of an alien resident of the United States who entered the United States prior to July 1, 1924, and who continuously for at least two years immediately preceding the time of his admission to the United States for permanent residence was, and who entered the United States solely for the purpose of, carrying on the vocation of minister of any religious denomination or professor of a college, academy, seminary, or university, and (2) who arrived at a United States port of entry between May 26, 1924, and July 1, 1924, and were thereafter temporarily admitted."

The Act of March 4, 1927, deferred for one year the operative date of Section 11 (b) of the Act of May 26, 1924.

Under the Immigration Act of 1924, a quota of two per centum is given each nationality based upon the census of 1890, with a minimum of 100 for any country having a quota less than that number, resulting in a total quota for all countries of 164,667. This determination was governed by country of birth.

IMMIGRATION VISAS

A quota or non-quota immigrant, except a returning resident, is required to obtain an immigration visa

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as a condition precedent to admission. Immigration visas are issued upon applications filed with American Consuls abroad. The application is in a prescribed form and the applicant must answer a series of questions. The immigrant is required to furnish, if available, to the consular officer two copies of his "dossier" and prison and military record, two certified copies of his birth certificate and two copies of all other available public records concerning him kept by the Government to which he owes allegiance. A returning resident may dispense with the necessity of securing an immigration visa by obtaining, prior to his departure from the United States for a temporary visit abroad, a return permit from the Department of Labor.

The law provides that no immigration visa shall be issued to an immigrant if it appears to the consular officer from statements in the application or in the papers submitted therewith that the immigrant is inadmissible to the United States under the immigration laws. The issuance of an immigration visa is also prohibited if the applicant fails to comply with the provisions of law, or if the consular officer knows or has any reason to believe that the immigrant is inadmissible to the United States under the immigration laws. A fee of \$9.00 is charged for the issuance of each immigration visa.

It is unlawful for any person, including any transportation company, or the owner, master, agent, charterer, or consignee of any vessel, to bring to the United States by water from any place outside thereof (other than foreign contiguous territory) (1) any immigrant, except a returning resident in possession of a return permit, who does not have an unexpired immigration visa, or (2) any quota immigrant having an immigration visa the visa in which specifies him as a non-quota immigrant. The law provides a penalty of \$1,000 for each violation of the foregoing character. In a geographical sense the term "United States" under the Immigration Act of May 26, 1924, means the States, the Territories of Alaska and Hawaii, the District of

Columbia, Porto Rico and the Virgin Islands.

QUOTA ADMINISTRATION

State and Labor Departments.—The Department of State through its Consular Service is directly concerned with the administration of the quota system, which has been operating with remarkable success, and in which it is assisted by technical advisers of the immigration service. The Department of Labor cooperates with the Department of State in the issuance of immigration visas to immigrants of a non-quota class and to those entitled to a preference in the issuance of an immigration visa by reason of their relationship to a citizen of the United States. With the exception of the few preference classes, visas are issued by the American Consuls on the basis of "first come, first served."

Classes of Immigrants.—Immigrants are divided by law into two classes, namely, quota immigrants who are subject to numerical restrictions, as well as the general immigration requirements, and non-quota immigrants, who may come to this country without regard to numbers, although not exempted from the general immigration requirements. In addition to the limited non-quota status conferred by the amendatory laws, the non-quota aliens are (1) the wife and unmarried children under 18 years of age, of a citizen of the United States; (2) returning residents previously lawfully admitted; (3) immigrants who were born in the Dominion of Canada, Newfoundland, the Republic of Mexico, the Republic of Cuba; the Republic of Haiti, the Dominican Republic, the Canal Zone, or any independent country of Central or South America, and their wives and unmarried children under 18 years of age, accompanying or following to join them; and subject to certain conditions; (4) ministers of religious denominations, or professors, their wives and unmarried children under 18 years of age, if accompanying or following to join them; and (5) immigrant students, over 15 years of age, coming to an approved institu-

CITIZENSHIP AND NATURALIZATION

tion of learning. These classes are admitted permanently, except immigrant students who must depart after they have abandoned this status.

Admissions and Rejections.—During the fiscal year ended June 30,

1927, there were admitted to the United States 158,070 quota immigrants. There were about 5,189 quota immigrants excluded who were not in possession of quota immigration visas.

CITIZENSHIP AND NATURALIZATION

BY RAYMOND F. CRIST

COMMISSIONER OF NATURALIZATION, DEPARTMENT OF LABOR

RIGHTS GRANTED BY REVISED STATUTES

Eligibility.—Every alien in the United States who is described by the language in Sec. 2169 of the Revised Statutes of the United States has a full and complete right, granted by the Constitution of the United States through the uniform operation of the naturalization laws enacted by the Congress, to endeavor to secure United States citizenship. This right is open to aliens regardless of sex, except as limited by the act of September 22, 1922, in which certain women whose husbands are ineligible for citizenship by reason of race are denied the right during the continuance of the marital status. This limitation forces its strictures with the same inflexibility upon native-born American women that it does upon foreign-born women. This exception from the general rule, as well as other exceptions, will be spoken of later.

Application of Rules.—The major act by which Congress undertook to exercise one of its Constitutional powers, is the act of June 29, 1906, 34 Stat. L. Pt. I, p. 596. This act of 1906, when taken in conjunction with the act of Congress approved September 22, 1922, 42 Stat. L. Pt. I, p. 1021, known popularly as the Cable Law from its sponsor in the House of Representatives, and a few minor provisions of law, constitute the rule under which naturalization is conferred with uniformity throughout the domain of the United States, extending from the Virgin Islands and Porto Rico on the southeast to Alaska with its far-flung western islands in the Arctic Circle and from

Hawaii in the Pacific Ocean to the easternmost border of the New England States.

The language in Sec. 2169 of the Revised Statutes permits of the application of the naturalization laws to such aliens only as answer to the description of free white persons, aliens of African nativity or of African descent. It is this racial limitation upon the field of operation of the naturalization laws that excludes some white native-born American women, who have lost their citizenship by marriage to aliens ineligible racially to citizenship, from acquiring American citizenship during coverture, because of the provisions to that effect in the act of September 22, 1922.

ADMINISTRATION OF LAWS

Bureau of Naturalization.—The administration of these various laws, comprising the uniform rule, is reposed in the Bureau of Naturalization of the Department of Labor. This bureau is under the immediate direction and control of the Secretary of Labor. The Bureau of Naturalization accomplishes its administration of the naturalization laws through the agency of a Field Service, with branches located at 27 strategic points throughout the United States, subject to the direction of the Commissioner of Naturalization, from the administrative headquarters in Washington. The organic law of the Department of Labor declares the Commissioner of Naturalization to be the administrative officer immediately in charge of the administration of the Bureau of Naturalization and of the

naturalization laws throughout the United States.

Examiners.—Congress has reserved the right of the Government to be represented at the naturalization of each alien, and it enters its appearance through the Naturalization Examiners who question the admissibility of the hundreds of thousands of applicants for the "priceless heritage" of American citizenship who annually petition therefor in upwards of 2,000 state courts and 200 United States Courts exercising naturalization jurisdiction.

The Philippine Islands have their own naturalization law, by which citizenship in the Philippine Islands is conferred upon alien residents of those Islands.

Cost of Administration.—The administration of the naturalization law is no expense upon the citizen taxpayers of this country. The total cost of the administration of the naturalization laws since Federal supervision, of \$10,336,384.50, has been met out of appropriations made by Congress. As an offset to this, the Government requires the deposit in the Treasury of the United States of the greater portion of the naturalization fees collected by the clerks of the naturalization courts from the aliens who seek citizenship. The total moneys deposited through the administration of the naturalization law up to and including 1927 amounted to \$10,982,164.02, leaving an aggregate surplus of \$645,779.52.

Fees.—For the fiscal year 1927 the collections of fees of all sorts amounted to \$994,654.41, while the expenditures for the year aggregated \$746,621.91, showing a net profit of \$248,032.50 to the Government over the bare appropriations. There are, of course, many other costs to the Federal and state governments in the administration of the naturalization laws which are not computed and do not appear in this statement.

NATURALIZATION PROCEDURE

The procedure under these various laws partakes of the nature of the ministerial and judicial. The first act is the ministerial act of making the "first paper" or declaration of

intention to become a citizen of the United States. It must be made in the court within whose jurisdiction the alien resides. The second, or judicial action, is the filing of a petition for citizenship. This also must be filed in the court within whose jurisdiction the alien resides. The final act is the hearing by the court of the petition. On this occasion, if the applicant is fortunate enough to be granted the privilege of citizenship, the oath of allegiance is administered and the certificate of his new citizenship is issued to him. This is popularly termed the "second paper." There are exceptions in which the strict requirement of residence in the jurisdiction of the court has been specifically and inferentially waived by acts of Congress passed subsequent to the dominant statute of 1906. These will be spoken of later.

RESIDENCE REQUIREMENTS

Legislation regulating the immigration of aliens into the United States with increasing restrictions has, from time to time, been enacted by the Congress. It is necessary, therefore, to look to the immigration statutes to ascertain when an alien can be regarded as residing in the United States. This rule has been laid down for the construction of the naturalization laws, both by the United States Circuit Court of Appeals and the Supreme Court of the United States, as well as the Bureau of Naturalization. It is applied by courts of original jurisdiction.

The first step toward the acquisition of citizenship, being the declaration of intention or "first paper," may be taken by the alien at any time after his admission to the United States. The declaration of intention must be made use of before it is seven years old, since its life then expires. At the completion of five years of residence, if at that time the declaration of intention of the alien is two years old, he may take the second step of petitioning to the court. At that time he must take with him two citizens of the United States as witnesses, who will be required to prove all of the residence of the applicant within the state in

which he resides at that time up to at least five years. If some portion of the five years of residence has been spent in some other state, this may be proven by other citizens of the United States, who may make proof by depositions. The petition must be signed in his own handwriting, and is required to be publicly posted for at least 90 days before it may be heard, in order to give the Government ample opportunity to examine into the qualifications of the applicant. An alien is not admissible to citizenship who practices anarchistic or polygamous doctrines, or who entertains such beliefs. As an evidence of his right to petition for naturalization, the alien must present and surrender his declaration of intention to the clerk of the court, and, except in a few cases, if he arrived in this country after June 29, 1906, also furnish a certificate from the Department of Labor showing the time, place, and manner of his arrival in the United States.

NATURALIZATION PROBLEM

Alien Population.—The problem of naturalization in this country is the most vast and complicated of any similar problem in any country. This is due to the teeming millions of foreign-born who have been permitted freely to enter our ports, domicile themselves here, and maintain themselves upon the wonderful resources of this country. The most vivid presentation of the picture of the alienage of the country is found in the Census Report of 1920. There were at that time 13,920,692 alien-born persons in the United States, according to that census report. Embraced in this number were all men, women, and children of foreign birth. Not less than 5,398,605 of these alien-born persons were unnaturalized, and 1,223,490 had only taken out their "first papers." These two groups comprised a total of 6,622,095, or nearly one-half of the foreign mass.

In addition to this total there should be added in all probability the 805,509 individuals regarding whom it was impossible to ascertain

whether or not they had divested themselves of their foreign allegiance. These three groups comprise a total of 7,427,604 of the 13,920,692, leaving 6,493,088, or less than one-half who had acquired American citizenship through the operation of the naturalization laws. A large percentage of these last had been given citizenship in this country without the formality of taking an oath of allegiance, filing a petition, or doing any affirmative act. These were the wives, and minor children residing in the United States or who among the latter came to the United States subsequently thereto during their minority. Upon these citizenship was automatically conferred upon the naturalization of the husband or parent. The accessions to this foreign group by years through the operation of the immigration laws indicate an increase of possibly 2,560,000 to the foreign population. This is not positive and conclusive but is taken from the showing of the ebb and flow of the human tide as illustrated in the immigration reports of aliens coming into the United States and those who depart therefrom for permanent stay.

Petitions and Grants.—At the end of the fiscal year 1927, there had been 5,324,874 declarations of intention taken out, and 2,386,635 certificates of naturalization granted as the result of the filing of 2,820,706 petitions for naturalization by applicants for citizenship under the act of 1906.

During the first seven years of the administration of this act, all aliens who had declared their intention prior to the operation of that law were permitted to file petitions for naturalization without making new declarations of intention. From this it is clear that practically two declarations of intention have heretofore been filed where but one declarant has subsequently made a petition for naturalization. Many thousands of petitions for naturalization have been dismissed, while a relatively small number were pending for hearing on June 30, 1927.

In the fiscal year of 1927 there were 258,295 declarations of inten-

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tion made, and 240,339 foreigners filed their petitions for naturalization. There is no relationship in a given year between the declarants and the petitioners, since the declarant must await the expiration of two years before he can become a petitioner after he makes his declaration of intention. There were 199,804 certificates of citizenship granted to alien petitioners during the year out of the 211,750 petitions for naturalization heard by the naturalization courts, and of these there were 11,946 who were denied admission. Over 40,000 petitioners were temporarily refused admission on the first hearing of their petitions for naturalization.

STATEMENT SHOWING ALIENS (CIVILIAN AND MILITARY) ADMITTED TO CITIZENSHIP DURING THE FISCAL YEAR 1927, ARRANGED BY NATIONALITIES

Country	Number
Italy	45,262
Poland	34,983
British Empire:	
Ireland	9,823
England	7,595
Canada	5,237
Scotland	3,386
Wales	430
Australia	115
Others	1,690
Total British Empire	28,276
Russia	14,934
Germany	6,881
Czechoslovakia	8,922
Greece	9,518
Serbs, Croats, and Slovenes, Kingdom of the	6,576
Hungary	5,043
Sweden	4,076
Turkey	5,374
Rumania	5,378
Austria	3,184
Norway	2,308
Holland	2,023
Denmark	1,626
Finland	1,400
Switzerland	1,764
France	1,123
Belgium	1,182
Spain	578
Portugal	566
Central and South America	343
Bulgaria	313
Luxemburg	152
Mexico	112
Montenegro	3
Repatriated Americans	3,286
Miscellaneous	4,618
Total	199,804

Since the enactment of the Cable Law the element of women candidates has been injected into the naturalization current. During the fiscal year 1927 there were 55,017 women and 203,278 men declarants, 44,426 women and 190,872 men petitioners, and 33,909 women and 161,584 men who were admitted to citizenship. Since the Cable Law of September 22, 1922, 235,427 women have declared their intention to become citizens, 124,031 women filed their petitions for naturalization, and 98,099 women were admitted to citizenship.

Exemptions.—There are certain aliens who are given exemptions from the strict rule of naturalization. Amongst these are sailors on merchant vessels of the United States, enlisted men in the Army, Navy, or Marine Corps, and those who were honorably discharged from the military forces of the United States during the World War. As to the latter, the statute enacted on May 26, 1926, giving them exemptions expires May 26, 1928. During the year 1927 there were 4,311 veterans of the World War American forces who obtained citizenship under the exemptions temporarily extended.

Immigration Visas.—While the title of citizenship gives to the newly naturalized all of the rights and privileges attaching to citizenship in the United States, there are certain special considerations which probably actuate the aliens in many instances. The certificate of naturalization entitles the foreign-born possessor to obtain preferences and exemptions from the immigration visa requirements for various members of his family who reside outside of the United States, enabling them to enter this country readily. To secure these exceptions, naturalized citizens petition for immigration visas. All immigration visas are in the custody of the Bureau of Naturalization. This bureau certifies to the correctness of the claim of the citizen for the exemptions to each member of his family residing abroad. By the end of the year 1927 there were 934,525 immigration visas on file in the Naturalization Bureau, surrendered by

COGNATE SOCIETIES

aliens under the Immigration Act of 1924. There were 26,349 applications received in 1927 from naturalized citizens for preferences for members of their families to enable them to enter the United States. In addition to these, there were 77,447 aliens who applied within the year for the privilege of taking the first step toward citizenship. Certification was made in 71,090 cases of the lawfulness of the entry of these individuals, while 2,063 were certified to the immigration authorities as probably in this country unlawfully, and for consideration for deportation. There were 40,702 applications received at the Ellis Island branch of the Naturalization Bureau for certification as to the legality of the presence of the applicants in this country to enable them to take the first step towards citizenship.

CITIZENSHIP TRAINING

Federal Textbook.—During the year a total of 488 communities requested the assistance of the Bureau of Naturalization in furthering the citizenship training or Americanization work of their public schools. To these schools 56,304 copies of the Federal Textbook on Citizenship Training were sent, for the purpose of enabling them to teach the candidates for citizenship the new responsibilities which they desire to assume.

LEGISLATION

Virgin Islands.—The Act of Congress approved February 25, 1927, is the only legislation completed dur-

ing the year relating to naturalization. This act conferred United States citizenship upon certain inhabitants of the Virgin Islands and extended the operation of the naturalization laws to those islands. The act clothed the District Court of the Virgin Islands with coordinate jurisdiction in the administration of the naturalization laws with the District Courts of the United States as well as the State courts which confer citizenship.

Relief Act.—Upon the convening of Congress in December, the bill H. R. 349 was introduced and passed the House of Representatives. This act of the House provides for the relief of the restrictions upon the proof of residence by aliens and simplifies this part of the naturalization proceeding. This action places in process of legislation one of the many recommendations made by the administrative authorities for the improvement of the operation of the naturalization law. Among the other recommendations made are that photographs be attached to all naturalization papers; that the applicant be able to read, speak, and write in the English language; that each alien be required to prove by a certificate the legality of his presence in the United States; that certificates of naturalization be available to all foreign-born citizens of the United States; that the naturalization fees be increased to a rate commensurate with the increased costs of administration and that the enrollment of aliens be authorized for educational purposes only.

COGNATE SOCIETIES

CITIES CENSUS COMMITTEE.—200 Fifth Ave., New York, N. Y.
CITIZENS' COMMITTEE OF ONE THOUSAND.—105 E. 22nd St., New York, N. Y.
LEAGUE OF FOREIGN BORN CITIZENS.—342 Madison Avenue, New York, N. Y.
NATURALIZATION AID LEAGUE.—175 E. Broadway, New York, N. Y.

IMMIGRATION

AMERICAN COLONIZATION SOCIETY.—516 Colorado Building, Washington, D. C.
NATIONAL LIBERAL IMMIGRATION LEAGUE.—128 Madison Ave., New York, N. Y.
NORTH AMERICAN CIVIC LEAGUE FOR IMMIGRANTS.—289 Fourth Ave., New York, N. Y.

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TRADE UNION IMMIGRATION BUREAU.
—201 Second Ave., New York, N. Y.

RACES

ALLIED CITIZENS OF AMERICA, INC.—
370 Seventh Ave., New York, N. Y.
AMERICAN ETHNOLOGICAL SOCIETY.—
Barnard College, New York, N. Y.
AMERICAN INDIAN DEFENCE ASSOCIATION, INC.—221 W. 57th St., New York, N. Y.
AMERICAN INDIAN LEAGUE.—927 Madison Ave., New York, N. Y.
AMERICAN JEWISH COMMITTEE.—171 Madison Ave., New York, N. Y.
AMERICAN SCANDINAVIAN FOUNDATION.—25 W. 45th St., New York, N. Y.
AMERICAN UNION OF ROUMANIAN JEWS.—799 Broadway, New York, N. Y.
ASSOCIATION GENERALE DES AL-SACIENS-LORRAINS D'AMERIQUE.—46 W. 46th St., New York, N. Y.
ANCIENT ORDER OF HIBERNIANS.—937 W. 54th Place, Chicago, Ill.
BAVARIAN NATIONAL ASSOCIATION OF NORTH AMERICA.—758 Broadway, Buffalo, N. Y.
CENTRO HISPANO-AMERICANO.—106 E. 14th St., New York, N. Y.
CENTRO VASCO AMERICANO SOCIETY.—77 Catharine St., New York, N. Y.
ENGLISH-SPEAKING UNION OF THE UNITED STATES.—345 Madison Ave., New York, N. Y.
FEDERATION DE L'ALLIANCE FRANÇAISE AUX ETATS UNIS ET AU CANADA.—32 Nassau St., New York, N. Y.
FEDERATION OF HUNGARIAN JEWS IN AMERICA.—1 Union Square, New York, N. Y.
FEDERATION OF POLISH HEBREWS OF AMERICA.—32 Union Square, New York, N. Y.
FEDERATION OF RUSSIAN POLISH HEBREWS OF AMERICA.—1824 Lexington Ave., New York, N. Y.
FOREIGN LANGUAGE PUBLISHERS' ASSOCIATION OF THE UNITED STATES, INC.—110 E. 42nd St., New York, N. Y.
FRANCE-AMERICA SOCIETY, INC.—248 Central Park West, New York, N. Y.
GENERAL NETHERLANDS ASSOCIATION

GROUP OF NORTH AMERICA.—179 S. Trenchard St., Yonkers, N. Y.
HEBREW SHELTERING AND IMMIGRANT AID SOCIETY OF AMERICA.—425 Lafayette St., New York, N. Y.
HOLLAND SOCIETY OF NEW YORK.—90 West Street, New York, N. Y.
HUGUENOT SOCIETY OF AMERICA.—2 W. 45th St., New York, N. Y.
HUNGARIAN SOCIETY OF NEW YORK.—47 W. 86th St., New York, N. Y.
INDIAN RIGHTS ASSOCIATION.—995 Drexel Bldg., Philadelphia, Pa.
INTERNATIONAL SERBIAN EDUCATION COMMITTEE.—100 W. 57th St., New York, N. Y.
JAPANESE ASSOCIATION, INC.—250 W. 57th St., New York, N. Y.
JEWISH CONGRESS COMMITTEE.—1 Madison Ave., New York, N. Y.
JEWISH NATIONAL WORKERS' ALLIANCE OF AMERICA.—228 E. Broadway, New York, N. Y.
LAKE MOHONK INDIAN CONFERENCE.—Smiley, Mohonk Lake, N. Y.
LITHUANIAN ALLIANCE OF AMERICA.—307 W. 30th St., New York, N. Y.
LOYAL SERB SOCIETY SRBADIYA.—443 W. 22nd St., New York, N. Y.
MEXICAN SOCIETY OF NEW YORK.—72 Wall St., New York, N. Y.
NATIONAL ASSOCIATION FOR ADVANCEMENT OF COLORED PEOPLE.—69 Fifth Ave., New York, N. Y.
NATIONAL FEDERATION OF UKRAINIAN JEWS OF AMERICA, INC.—1 Union Square, New York, N. Y.
NETHERLAND AMERICAN FOUNDATION.—17 E. 42nd St., New York, N. Y.
ORDINE FIELI D'ITALIA IN AMERICA.—231 E. 14th St., New York, N. Y.
POLISH FEDERATION OF NEW YORK CITY, INC.—705 Courtlandt Ave., New York, N. Y.
POLISH NATIONAL ALLIANCE.—180 Second Ave., New York, N. Y.
RUSSIAN NATIONAL SOCIETY.—5 Columbus Circle, New York, N. Y.
SONS OF ITALY.—231 E. 14th St., New York, N. Y.
THERSALIAN SOCIETY.—667 Eighth Ave., New York, N. Y.
UKRAINIAN NATIONAL COMMITTEE OF THE UNITED STATES.—30 E. 7th St., New York, N. Y.
UNITED ROUMANIAN JEWS OF AMERICA, INC.—799 Broadway, New York, N. Y.

COGNATE SOCIETIES

UNIVERSAL NEGRO IMPROVEMENT ASSOCIATION AND AFRICAN COMMISSION LEAGUE.—56 W. 135th St., New York, N. Y.

NATIONAL YOUNG JUDEA.—114 Fifth Ave., New York, N. Y.

YOUNG MEN'S HEBREW ASSOCIATION.—92nd St. and Lexington Ave., New York, N. Y.

ZIONIST ORGANIZATION OF AMERICA.—114 Fifth Avenue, New York, N. Y.

DIVISION XVII

RELIGION AND RELIGIOUS ORGANIZATIONS

INTERDENOMINATIONAL ACTIVITIES AND CONTROVERSIES

BY H. K. CARROLL

GENERAL STATISTICIAN OF THE CHURCHES

LAUSANNE CONFERENCE ON CHRISTIAN UNITY

The outstanding event of the year in the religious world was the comprehensive Conference of Faith and Order, held in Lausanne, Switzerland, August 3-21. This movement was launched in the interest of Christian Unity by the triennial convention of the Protestant Episcopal Church of the United States in 1910. The seventeen intervening years were occupied by representative committees in making preparations for reaching not only the Roman Catholic and Greek or Oriental Churches with invitations to participate in the proposed conference, but also the Evangelical or Orthodox Protestant bodies. The Pope was approached with a cordial request to appoint representatives, but while expressing interest in the attempt to work for a United Christendom, he declined to take part. The Oriental Orthodox Churches and the Protestant bodies generally accepted the invitation to participate in the Conference. The Committee of preparation and program also promoted preliminary discussion, among small interdenominational groups, of subjects to come before the Conference, with the view of deciding upon the formulation of the topics and ascertaining how far they could agree on them, and how far they must agree to differ.

At the opening of the Conference about 500 delegates were in attendance, from fifty countries, representing nearly ninety Churches and speaking many different languages. It was

agreed that the Conference should conduct its sessions in English, German and French, which considerably lengthened the proceedings. The Right Rev. Charles H. Brent, Protestant Episcopal Bishop of Buffalo, N. Y., was selected as chairman, and Principal A. E. Garvie, of London, Non-conformist, to serve as deputy chairman.

It was a distinguished assembly. From the Anglican Communion came Bishops, English, Scotch and Irish, in varying ecclesiastical garments, also from the colonies and from the United States. Bishops, metropolitans and other distinguished prelates, in striking vestments, came from several branches of the Oriental communion, while well known Protestant leaders, including Professor Adolf Deissmann, of Germany; plainly dressed Baptists, Disciples of Christ, Methodists, Presbyterians, and Reformed; theological professors from many churches, and eminent laymen; men of all the creeds, including the seven Ecumenical, for which the Eastern Churches stand solidly; Presbyterian and Reformed confessions, the many Lutheran symbols and other doctrinal formularies had their adherents in the Conference, and also there were Quakers, who have no creeds, Baptists and others who accept the Bible as their rule of faith. All views of the sacraments were represented, even that of transubstantiation; also the Quaker idea that the Lord's Supper and Baptism are not ceremonies to be observed, but ideal or spiritual conceptions; also that

there is no priesthood except of believers.

The Conference sessions were held in the morning and late afternoon. The first three days were occupied with general discussion and set speeches prevailed. Then the Conference was divided into three sections or groups of about a hundred each, for more intimate and detailed discussion, each when it had finished a subject presenting a report of it to the Conference, which simply accepted it and sent it to another committee for revision. Each denomination was encouraged to persist in making known its particular views.

The first subject discussed was "The Church Message to the World—the Gospel." On this there was a quite general agreement. The opening sermon by Bishop Brent was a loving call to unity. This was a Conference, not a controversy; it sought to promote agreement, not to make further division. This discourse breathed the spirit of brotherly love and its effect was seen in the result of the first discussion. Professor Deissmann, a great German scholar and leader, uttered words which were very warmly received. He said the English word "Gospel" was the most happy rendering of the Greek *Evangelium* of the New Testament; that it is "the trumpet blast of an archangel, a moving call to repentance, a word of blessing and comfort . . . whose aim is to turn people 'to the living God.'"

No formal conclusions or findings were adopted on any question, but the several reports were ordered printed, each with a preamble, and sent down to the participating churches for further consideration, with the hope that the agreements will be added to and the difference lessened. The preamble opens as follows:

"We, representatives of many Christian Communions throughout the world, assembled to consider, under the guidance of the Holy Spirit, the things wherein we agree and the things wherein we differ, receive the following series of reports as containing subject matter for the consideration of our respective churches in their common search for unity."

The enacting clause of the preamble was "received" with practical unanimity and so was the report on the "message—the Gospel." The Oriental delegates voted heartily on both, but refrained from voting to "receive" the other reports. The only semblance of division occurred on the Unity of Christendom, the last of the subjects treated. It is understood that the wording of the report was objected to by some as seeming to put Protestantism in the forefront and not giving sufficient recognition to the Greek churches and the Catholic element in the Anglican Communion.

"The Nature of the Church" and the "Church's Common Confessions of Faith," the second and third topics, brought out some agreements, but perhaps more differences. The three other subjects were "the Ministry," "the Sacraments" and "the Unity of Christendom." There were some wide differences on each of these subjects, and it was a great disappointment to many that the simple sacrament of the Supper of Him who brought to the world the Gospel of Salvation, could not be observed quietly, sincerely and worshipfully as the Master and His lay disciples observed it at the close of His earthly ministry.

What was accomplished? No decision was reached in the nature of an agreement on any of the subjects. Probably most would agree that the idea of Christian Unity was promoted in some degree, that the fact that there are so many divisions is deplorable, that it is the privilege and duty of all to endeavor to reach a better understanding, and that universal prayer for a willingness to labor earnestly for the removal of differences that are not deeply seated in the conscience, is the duty of all.

The Continuation Committee is continued with the hope that the way may be opened for another Conference which may carry the movement further.

UNION MOVEMENTS

Liberal Bodies Seeking Closer Relations.—In 1925 the Congregational Churches received into their communion a body known as the Evan-

gelical Protestant Churches, which was composed chiefly of German-speaking people who were of liberal faith, similar to that of the Unitarians. They had no close organization and their use of the German tongue in worship was reducing their strength. The number of this body joining the Congregational denomination was reported as embracing 25 ministers, 29 congregations and 15,000 members.

This has been the precursor of other similar approaches with other bodies. *First*, between the Congregationalists and the body known as the American Convention of the Christian Church. This latter organization came into being near the beginning of the last century by the union of small bodies of detached Methodists, Baptists and Cumberland Presbyterians, on the basis of no creed but the Bible, and no sectarian name. Formerly it had a leaning toward Unitarianism, but in recent years it has been regarded as orthodox, but its position from the first has been that persons shall not be barred from fellowship by any test of creed or practice. Hence, while immersion is the general practice, other methods are allowed and close communion is not followed. In May last a joint meeting of the North Carolina Association of Congregationalists and the North Carolina Conference of Christians was held, resulting in agreement for union. Previously, at a conference between representatives of the General Convention of the Christian Church and of the Congregational Commission of Inter-church Relations, it was reported that an agreement for union had been adopted by the General Christian Convention in October, 1926, and would be presented to the Congregational National Council in October, 1927. It was so presented and approved.

Second, The National Congregational Council and the Universalist General Convention, through an action by their respective commissions, have entered into a reciprocal declaration of agreement for Christian fellowship, on a basis of living faith, unhampered by any particular creed, with the hope that this fellowship

may lead eventually to affiliation as one body.

Third, Similar negotiations are pending between the Congregational and Unitarian bodies, which may result in a final restoration of their former oneness. If Congregationalists, Christians, Universalists and Unitarians become one, the four bodies would have a total of over a million members.

The United Church of Canada, composed of former Presbyterians, Methodist and Congregational bodies, holds on its united way with increasing vigor and unanimity. Agreement has been reached with the Government by a parliamentary act settling the property and other questions involved. Also the Church, through commission, has reached an agreement with the Presbyterian dissenting element by which a division of the property, the missions and the funds, has been pacifically settled, and an adjustment has been made by which the colleges and seminaries have been unified as far as possible for the service of the United Church. In Montreal, a staff representing Methodist, Presbyterian, Congregational and Anglican elements has been agreed upon for one strong central institution. Likewise collegiate and ministerial training institutions have been assigned to the nonconforming Presbyterian element.

Community Churches.—These are mainly found in rural sections and have grown up since the war. They consist of interdenominational union of two or more denominational churches too weak to prosper separately. They are found mainly in the Northern and Western States. Some have limited denominational attachments. They are mainly of Baptist, Methodist, Congregational and Presbyterian origin. The life of these merged bodies varies. Sometimes they dissolve and come together again. A slight denominational attachment seems to assure greater permanency. There are twelve hundred or more of them.

THE CHURCHES AGAINST WAR

The Churches very generally are promoting the movement for the establishment of permanent peace be-

tween nations. Near the close of 1927 five hundred peacemakers, mostly workers in the Churches, held a conference in St. Louis, under the auspices of the World Alliance for International Friendship Through the Churches, which operates under the auspices of the Federal Council of the Churches of Christ in America. Extreme advocates are impatient with what they call half-way measures and insist that war be immediately outlawed. Others of more moderate ideas propose to proceed by inducing the nations to get together, vote war a crime, set up a world court of arbitration and create a code of international law. To most the League of Nations seems a good organization to begin with. Others favor an extension of the pact of Locarno and would have the United States accept the invitation of France and unite with that nation and other powers in a declaration against war.

The Administrative Committee of the Federal Council of the Churches of Christ sent resolutions to Congress in Washington, asking that body to favor the making of treaties with France, Great Britain and other nations, renouncing war as an instrument of national policy, except in case of defence against attack, and agreeing to submit questions not solvable by diplomacy to international tribunals for arbitration.

UNUSUAL CHURCH LOSSES

The Protestant Churches were stirred, in the middle of the year, by reports that heavy losses were being sustained by most of the bodies by pruning of membership rolls. These were not net losses, as many assumed, as all the Protestant Churches, save one, reported net gains for 1926, though somewhat reduced. The inquiry seemed to show that many members removing from one community to another, with and without letters of dismissal, fail for various reasons to join churches in the places to which they remove, and others become inactive and do not attend the churches to which they belong, nor aid in their support. An Inter-Church Conference met in Philadel-

phia to investigate and agreed that the reports were true, but held that each church had the power to apply remedies which would lessen and remove the evil. It was made evident that the churches are not receiving as many new members as in years past, and this fact makes the effects of the "back door" losses more noticeable. Statistics show that the gains of the Evangelical Churches for the past twenty-six years are full of encouragement.

Chicago's Interest in Religion.—A survey of the churches of all faiths in the Metropolitan area of Chicago, under the auspices of the Federation of Churches, appears to have produced unexpected and encouraging results. The outcome indicates that 3,000,000 are members of the various congregations. The Catholic and Protestant numbers are nearly equal and between 300,000 and 400,000 adherents of the Jewish faith are reckoned among the population. Among the Protestants the Baptists come first with 92,000, the Lutherans second with 91,500, the Methodists third with 70,500, the Presbyterians fourth with 47,500, the Episcopalians fifth with 34,000, and the Congregationalists sixth with 32,300.

CONTROVERSIES

There were fewer disturbing controversies than in 1926. Rev. Harry Emerson Fosdick says the Modernist-Fundamentalist movement has "petered out." There is some of it still among the Baptists and occasional outcroppings elsewhere; but it no longer occupies conspicuous places in the public prints. At a meeting of the World's Fundamental Association in Atlanta, Ga., in May last, Dr. W. B. Riley, Baptist, its President, issued a statement of nine points to which the Association adheres, including the Virgin birth of Christ, His bodily Resurrection, the inerrancy of the Bible, the Second Advent.

Dr. Fosdick's Opinion.—To quote Dr. Fosdick again, this particular controversy has solved no problems, a not unusual result, it being generally "a waste of time and energy for all concerned." An epoch will

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come in which both conservatives and liberals will recognize that whatever may be the truth about theology, "good-will is religion." While some may insist on continuing the fight, the militant Fundamentalist and the supercilious liberal will meet with scant sympathy from the Christian public. "The new age, according to this popular preacher, will adopt the confessional, which Protestantism threw out of the door. It will come back through the window, with new methods and with entirely new intellectual explanations appropriate to the Protestant Churches. It is needed to meet the inward problems of individuals. It matters little what it is called so that in the vast field of human need confession of sin and spiritual need is met with sympathetic and intelligent treatment."

FINANCES OF THE CHURCHES

The returns of eighteen of the leading Protestant Churches of the United States for 1926, covering their budgets of congregational expenses and benevolences, or church activities in missions, home and foreign, education and other lines of church work, show large totals, that for contributions for all purposes reaching \$400,491,652. Among the churches with the heaviest of these budgets are the following: Methodist Episcopal, \$97,107,239, made up of \$78,638,095 for congregational expenses and \$13,989,589 for the benevolent budget; Presbyterian Church in the U. S. A., \$60,920,373, of which \$44,516,376 is for congregational and \$10,007,762 for church activities; Methodist Episcopal Church, South, \$42,082,127, of which \$28,136,304 goes to the congregational budget, and \$11,014,467 to church work; Southern Baptist Convention, \$39,027,009, of which \$30,771,574 is for the expenses of the local churches, and \$8,255,435 for the benevolent budget; Congregational Churches, \$27,403,216, of which \$20,772,218 is for support of the churches and \$3,464,600 for church activities; Northern Baptist Convention, \$31,090,550—\$24,787,592 for support of the churches, and \$5,432,442 for church activities; United Lutheran Church, \$19,403,307—\$15,691,423 for

support of the churches, and \$3,711,884 for benevolent activities; Presbyterian Church in the United States (Southern), \$15,215,430—\$9,737,804 for support of the churches and \$4,110,992 for their benevolent work.

The Church which attains to the highest per capita giving—\$41.30—is the United Presbyterian, whose membership is 170,650. Its benevolent budget is more than half of the cost of running its churches. The next in this list is the Reformed Church in America, whose per capita of contributions is \$36.10. The per capita of the largest church, the Methodist Episcopal, is \$24.70. The local budgets of the 18 churches in the list amount to \$390,615,148.

CHRISTIAN APPROACH TO THE JEW

The Rev. Dr. Charles R. Erdman, former moderator of the Presbyterian (U. S. A.) General Assembly, writes of a notable and significant council, held in Warsaw last year on this subject. For the first time the Christian Church was represented by leaders of the movement from twenty churches of America, Europe, Asia and Africa. They met under the auspices of the International Council and the Conference of Missionary Societies in Great Britain and Ireland. Findings are given covering a review of the present condition of the Jewish people, the problems involved in the presentation of the Gospel to them, and the results achieved. Stress was laid upon these facts: *First*, disintegration of Judaism and a drift toward atheism, socialism, agnosticism, materialism and irreligion, offer a unique opportunity to the Christian Church for an appeal to them; *Secondly*, that reckoning the Jews as a body of eighteen millions, widely distributed in Christian communities, the efforts to win them to Christianity have been "pitifully weak, sporadic, unorganized and faint-hearted." *Thirdly*, considering how difficult the work is and that it requires trained workers, the number of Jewish converts to Christianity is "surprisingly great" and the chief problem is not that of securing access to the Jews, but that of rousing the Church to its present opportunity.

CHURCH AND GOVERNMENT RELATIONS

By H. K. CARROLL

GENERAL STATISTICIAN OF THE CHURCHES

REVISED PRAYER BOOK IN ENGLAND

The Church of England has been using the Prayer Book unchanged since the revision of 1662. Archbishop Cranmer had taken a leading part in the preparation of the edition of 1552, compiling much of it with his own hands and giving the reformation large place in it, especially the doctrine of the Sacrament. He was much opposed to the Catholic doctrine of transubstantiation. The present revision provides for the reservation of the blessed sacrament, though for the sick only, but therein recognizes, it is claimed, and makes legitimate, the elevation and adoration of the host. This was the particular change that created most opposition from the Evangelical party, and others, but was most welcome to the Catholic party. The revision makes many alterations which, however, are in the main simply of a verbal character, and were intended to be optional. It was to be bound with the existing Prayer Book and might be used in whole or in part, as desired. Those who preferred the old book could use that; those who liked the new could use it, or parts of it, as they might elect. The main thought of the revision was to fix church law and achieve elasticity and comprehensiveness. Of a popular or modern character was the omission of the word "obey" from the bride's part in the wedding ceremony. Some prayers for the dead and for other occasions were introduced and extemporaneous prayer was permitted. The course of the revision went smoothly, on the whole, the two archbishops and convocations approving it and the Church Assembly also.

The final stage was the action of Parliament. The House of Lords first took it up and discussed it, the Bishops, with the exception of Bishop Barnes of Birmingham, who had opposed it previously, voting for the adoption of the motion to approve the contents of the bill. The vote

was 241 to 88, many peers abstaining from voting. It was thought that the decisiveness of the vote would help the revision through the House of Commons, but the people's representatives treated the nation to a surprise, rejecting, by a vote of 238 to 205, the bill when it came to them from the Lords.

The end came after a tense debate of a day. The large opposition vote was cast by many not members of the Church of England, who were not unwilling to give new point to the question of disestablishment. The Archbishop of Canterbury, who heard the debate from the gallery, was sadly disappointed, as were other prelates, that the work of twenty years should be lost, when they had hoped for so much from it in settling the ecclesiastical rules of the Church, and promoting its discipline and peace. The Prime Minister, who spoke strongly for the revision, warned the House that its rejection would result in chaos. A feature of the discussion was the division among members of Premier Baldwin's cabinet, some supporting, some opposing the motion. Perhaps the strongest and most telling speech against revision was delivered by Sir Wm. Joynson-Hicks, Home Secretary, who said Roman practices had been tolerated in the Church for twenty years. The bishops evidently could not suppress them, so they surrendered to them.

Conference of Bishops on Procedure.—The unexpected defeat of the measure gave great concern to the body of bishops of England and Wales (the Church in Ireland was disestablished under the government of Gladstone and the Established Church in Scotland is not the Episcopal body, but the Presbyterian). They held a hurried meeting to confer as to what was best to be done, and issued a statement, through the Archbishops of Canterbury and York, in which they state they do not accept the adverse vote of the House

of Commons as final, but before reaching a definite determination of a course of procedure they will have another conference in January, hinting that an amended revision may be presented to the National Church Assembly and the two Convocations, and that the Book, slightly altered, may again be introduced in Parliament for action. The statement holds that mere acquiescence in the decision of the House of Commons would "be inconsistent with the responsibilities of the Church as a spiritual society," and adds that circumstances might make it a duty "to take action in accordance with the Church's inherent spiritual authority," which is interpreted to mean that disestablishment might be faced as a duty.

PRESSING MISSIONARY PROBLEMS

The continuance of war-like conditions in the clashes of bodies of Chinese troops striving for precedence in setting up a native government for China, and of the lawless raids of groups of bandits, has resulted in the temporary suspension of most of the missionary work and the departure of many of the missionaries and their families. Missionary societies, as represented by the Foreign Missions Conference of North America (also by a similar body in Great Britain), are generally agreed that extraterritorial laws should be abandoned, that claims upon China for indemnity for losses of missionary property and expulsion of missionaries should not be made through the home government, that the aim of all missionary work should be an ultimate indigenous Church, uniting all denominations, and under the control of Chinese ministers and laymen.

Beginnings in line with this new policy have already been made by the Anglican Communion, representing Great Britain and its colonies, and the Protestant Episcopal Church of the United States; the Reformed and Presbyterian bodies, American and British, and by a union of 19 denominations in the formation in Shanghai, October 1-11, 1927, of the Church of Christ in China, which is to seek for the union of all Christians in one body, under the non-de-

nominal name already taken. This is a notable advance on all previous undertakings, at least, in scope, and seems to promise an early realization of the visions and hopes of the Lausanne Conference on Faith and Order. It will satisfy the Chinese Christians themselves who say "we recognize most vividly the crying need of Christian salvation for China." Moreover, there is no anti-Christian movement among the Chinese, save that led by Bolsheviks which seems to have declined. The Foreign Missions Conference, North America, states that there are in China 400,000 baptized church members, with 130,000 baptized persons in training for membership, making a total of 530,000 baptized communicants. There are 250,000 others under instruction, making a total Christian community of 780,000. In addition the Roman Catholics report a membership of almost 2,000,000. Nearly 2,000 ordained Chinese are serving as preachers and pastors, with 18,166 unordained workers. The missionaries and native ministers and other workers express no doubt as to the future. The English Baptists, who are numerous in Shantung Province signified their purpose to join the new native church and it is expected that the American Methodists will cast in their lot with it after their General Conferences shall have taken the necessary action. The idea of a native church, embracing all or most of the Protestants, began as long ago as 1907. The Chinese do not understand the reasons for division of Protestants in America, nor the significance of their names and history of differences.

OTHER INDIGENOUS CHURCHES

Japan and India.—There are several indigenous churches in Japan,—Congregational, Presbyterian and Methodist. In India three distinct bodies organized on undenominational lines are in operation, and the indication is that this policy of merging separate denominational organizations into one Christian body is growing in favor, both in Asia and Africa.

The Roman Catholic Church in Mexico.—There seems to be a cessa-

PROTESTANT DENOMINATIONAL ACTIVITIES

tion of active hostility between the Government and the Church, but priests have been summarily executed charged with cooperating with bands of rebels. The work of Catholic congregations has not been resumed, most of them being still in-

active. No foreign minister or priest is allowed to conduct worship in churches, whether Catholic or Protestant, but in contrast to this Protestant churches having native ministers are not interrupted in their work.

PROTESTANT DENOMINATIONAL ACTIVITIES

By H. K. CARROLL

GENERAL STATISTICIAN OF THE CHURCHES

BAPTISTS

The Northern Baptist Convention, meeting in Chicago, with 3,000 or more accredited delegates, considered many questions of denominational policy and work, under the presidency of Dr. Brougher, of Los Angeles. The Finance Committee's budget for the next three years was considered and heartily approved. It recommended that \$8,617,338 be fixed for 1927-28 for home and foreign missions, education, publications and other purposes, of which \$6,435,000 is expected from the churches and \$2,182,000 from other sources. The resolutions pronounced strongly for world peace, for the home as threatened by increasing divorces, for evangelism, for prohibition and for law enforcement. Mr. W. C. Coleman is the new President.

The Southern Baptist Convention, at Louisville, Ky., was attended by 4,500 delegates and even more visitors. Dr. George W. Truett was chosen President. Various denominational interests were considered, under discouraging conditions of the finances of the boards, excepting that of the Sunday School.

The statistical returns for 1926 show that the largest body, the Southern Baptist Convention, has 3,701,142 members, 18,559 ordained ministers and 25,989 churches, indicating gains for the year of 65,918 members but considerable decreases in ministers and churches. The Northern Convention reported 1,392,820 members, a gain of 18,132, 8,439 ordained ministers, a loss of several hundred, and 8,271 churches, a loss of 109. The National Baptist Convention (Col-

ored) reported 2,253,369 members, a loss of 57,600, indicating a continuance of migration from the South to northern cities. There are 16,698 ministers, loss, 3,352, and 22,665 churches, loss, 3,352. The Editor of the *American Baptist Year Book* states that it is "impossible to secure accurate returns of the Negro Baptists." He thinks their number is much larger. They are divided into two conventions, which probably adds to the statistical difficulty.

The Fundamentalist controversy is not yet at an end among the Baptists. The Baptist union of Toronto has, as the result of a long dispute, expelled from its membership Rev. H. T. Shields, pastor of the Jarvis Street Baptist Church, Toronto, and a militant Fundamentalist, his church having been divided on the subject.

A notable event in Baptist church building enterprise was the laying of the corner stone of the Park Avenue Baptist Church, New York City, to which Rev. Harry Emerson Fosdick ministers. It is to cost \$4,000,000.

The grand total of members of the fifteen Baptist bodies in 1926 was 8,670,895, indicating a gain for the year of 66,022. The number of baptisms for the year, which indicate new members added, was 325,386, showing a loss from the previous year of 29,766.

CONGREGATIONALISTS

The Congregational General Council, biennial, held in Omaha, Nebraska, in May, Prof. Ozora S. Davis, President, had before it questions of unusual importance in its relations with other bodies. (See Liberal Bod-

ies Seeking Closer Relations.) Perhaps at no previous session was sentiment so apparently ready for advances in the direction of unity. The Council of 1913, at Kansas City, had declared its adherence to the Apostles' Creed as a general definition of its faith, but it was willing, in the interest of an enlarged fellowship, to say, at Omaha, that it was not put forth as a test but as a simple declaration.

A joint statement, published in February, 1927, declared, in the names of the Congregational Commission on Inter-Church Relations, and the Universalist Commission on Comity and Unity, that "we believe that the basis of vital Christian unity is a common acceptance of Christianity as primarily a way of life. It is faith in Christ expressed in a supreme purpose to do the will of God as revealed in Him and to cooperate as servants of the Kingdom for which He lived and died. Assent to an official creed is not essential." This is, perhaps, the most advanced statement the Congregational, or any other orthodox church has ever made as the basis of Christian union. Reports of denominational work abroad and at home were presented to the Council, showing that missions were spreading the Gospel and bringing diverse elements into the Kingdom. The treatment of the Negro was discussed and it was agreed that he must be met as a man if Christianity is to hold him, and that the caste spirit is outgrown and unworthy. His migration North continues, the floods having given a new impetus out of the South, not only to the Negro, but to the white man as well, at least, temporarily. More training to fit black men for the Christian ministry was stressed. The program included also international and social relations, evangelism, ministerial relief and other subjects.

LUTHERANS

This large body, ranking fourth among the Protestant groups, is characterized by large activities in various lines of its church work. Further unions are pending among them, particularly among large independent

joint synods, which cooperate with the United Lutheran Church and various Synods in the National Lutheran Council. The Lutherans of America were strongly represented in the Lausanne Conference for church unity and took their full part in the discussions. As a whole, they are conservative, taking little interest in Modernism and standing sturdily by their various symbols. One minister among them was deposed the past year for heresy on the Virgin birth and other points in the Apostles' Creed. Since the war they have been in helpful cooperation with the Lutheran churches in Europe. In parts of Germany, in Russia, in Czechoslovakia and other countries the Lutherans have been gaining new strength in numbers and a larger unity. In the United States the various bodies are gaining year by year. The total of Lutheran communicants in 1926 was 2,588,279, an increase of 42,152, the number of ministers was 10,795, a gain of 241, and of churches, 15,549, a gain of 238. The language differences are not so pronounced as they were before the World War, the various national elements having become anglicized in speech to a much larger extent. The Scandinavian synods bulk large. There are three Finnish bodies, and an Icelandic and a Slovakian.

Average Size of Lutheran Churches.

—An inquiry made in 1926 shows the average number of baptized members to whom a pastor ministers in various synods in the United States. In the larger synods, as the Joint Synod of Ohio, it is one to 350, in the Joint Synod of Iowa, it is one to 365. In the Augustana Synod, Swedish, it is one to 375. In the Norwegian Lutheran Church, one pastor has 358, in the Finnish Apostolic Synod, which lacks in ordained ministers, one minister has 10,000 under his care. Laymen take care of most of the other churches in the synod. The general average for the United States and Canada is one minister to 375 members. This includes a total baptized membership of 4,112,680.

World Lutheran Convention.—The second of the great gatherings, embracing the Lutherans of all countries, the greatest of Protestant bod-

ies, has been fixed for June 21, 1929, for Copenhagen, Denmark. The Executive Committee, at a meeting in Budapest, Hungary, last fall, decided upon the time and place, also upon other important matters, among which was the establishment of a Lutheran news service to embrace Europe and America, where the largest Lutheran bodies are to be found. Since the World War Lutherans of America and Europe have shown an amazing activity in making their organizations, their work and their statistics known to the general public. Here in the United States they have a general headquarters at 39 East Thirty-fifth Street, New York, not only for the United Lutheran Church, the largest general body, but also for the Lutheran Council, embracing most of the Lutherans in this country and Canada. They issue a weekly bulletin for the benefit of the Lutherans; also for the daily press, giving the latest information about Lutheran affairs throughout the world. They publish from these headquarters a *World Lutheran Almanac*, which furnishes widest information as to the numbers of Lutherans, not only in America, but in other continents.

Rev. Dr. John A. Morehead, whose office is at the headquarters in New York, and who is the chairman of the executive committee of the Lutheran World Conference and Executive Director of the National Lutheran Council, visited Budapest to confer with other members of the executive committee concerning arrangements for the world conference. A feature of the Committee's work is the appointment of deputations to visit Lutheran bodies in countries not so well known as the United States, Canada, Germany and Scandinavia, with the view of both giving information concerning the purposes of the World Convention and receiving it as to conditions of the communion in less known sections. The Executive Committee at its meeting in Amsterdam, Holland, in 1925, learned that there were in the Netherlands at least 100,000 Lutherans. At its Budapest meeting in 1927 it came into close relations with the Lutherans of Hungary, Poland, Rumania

and Czechoslovakia. They occupy the position of a minority in these countries and since the war have made strenuous efforts for advancement. In Rumania, where a deputation met a Lutheran body of representatives at Arad, there are 350,000 Lutherans in two groups, one being a Saxon body. In Poland, which suffered greatly from the war, much needed relief has been distributed. The tension is still strong between the Germans and the Poles.

Women on Church Boards.—The executive committee of the Synod of New York and New England has adopted a recommendation that women be admitted as members of Lutheran Church boards, on the same terms as men, on synodical committees, if approved by the Synod at its next meeting.

Care of European Immigrants.—Secretary Bittle of the Lutheran Immigrants Mission Board of the United Lutheran Board, calls attention to the large number of immigrants from Lutheran lands who have come to the United States and need the care of that Church. The statistician of the Lutheran Council states that if it had taken full supervision of strangers belonging to it, it would now have twenty-five million communicants, including Canada, instead of less than one-fifth of that number. Of Slovak Lutherans there were 100,000 reported on this side of the ocean, but the one Slovak synod has scarcely a seventh of that figure. There are six thousand Lutheran Slovaks in New York City, but no church of their own faith for them. The Finns have also been coming to this country and joining one or other of the three Finnish synods, but now they are pouring into Canada.

METHODISTS

Methodist Episcopal.—The benevolent work of this body is under the general care of the World Service Commission, which aims to unify the work in its financial appeal. It includes home and foreign missions (except the Women's Societies), the Sunday school, the Epworth League, white and negro educational institutions, ministerial pensions. The re-

ceipts for these purposes have been falling in volume since 1920 when under the centenary movement they reached a total of \$15,307,070. In 1927, under World Service, they amounted to \$7,227,209, the smallest total in the eight intervening years. Of this sum, \$2,368,247 went to home missions, \$2,418,814 to foreign missions, not including \$600,000 for the foreign mission debt, \$1,131,327 to education, \$97,152 to hospitals, homes and deaconess work, \$88,351 to temperance and prohibition, \$84,628 to pensions and relief, \$69,654 to the American Bible Society, and \$416,207 to expense of promotion. The two women's societies, whose resources differ from those of the general appeal to the churches, raise something like four and a half millions, or nearly \$2,500,000 each, and administer these amounts with the approval of the Foreign Board and the Home Board, respectively. The joint action of the General Conference of the Northern and Southern Methodist Churches, for the promotion of union of churches in the same territory, is bearing fruit in an amicable adjustment at Canton, Mo.

Unification in Korea.—The two Methodist bodies in Korea, the Methodist Episcopal and the Methodist Episcopal, South, propose unification and have sent jointly a memorial to their respective conferences for approval. The two denominations united years ago in organizing the Methodist Church of Japan, which has its own bishop and directs its own work.

Unification of Negro Churches.—A proposition for the merging of the several Negro Methodist bodies, African Methodist Episcopal, African Methodist Episcopal Zion, Colored Methodist Episcopal, has been pending for some years, with little indication of progress. A more ambitious project comes from the Editor of the *Christian Recorder*, African Methodist, that all Negro Churches, Methodist, Baptist, Presbyterian, etc., create a great racial Church. This is something to dream about, but the difficulties in the way of realization are enormous.

Free Methodist General Conference.—This quadrennial body met in

1927, elected four bishops and other denominational officers and received reports on evangelism, educational institutions, home and foreign missions, publications and other denominational affairs. It represents a very conservative body, the Conference refusing by a large majority to adopt a memorial for the introduction of instrumental music in the churches. It has missions in Africa, China, Japan, India and San Domingo, for which it raised in the last four years, \$652,741. It fixed the salaries of its bishops at \$2,250 a year and of its general evangelists at \$2,000, of which a portion may be drawn from its home mission fund. The Church has 37,651 members, 1,189 churches and 1,324 ministers. It is growing slowly.

The net increase of the group of 15 Methodist bodies in members in 1926 was less than usual—48,098, the grand total being 8,968,288. Ordained ministers, 44,408, show a decrease of 106; and churches, 62,559, a decrease of 743.

PRESBYTERIANS

Presbyterian Church in the U. S. A.—A quieter year was enjoyed by this large body in 1927 than in previous years. New York Presbytery, a former center of differences, was not a subject of difficulty in the General Assembly of May last. Dr. Robert Speer's year of moderatorship has been a quiet one, though the controversy over the policy of Princeton Seminary has not yet been settled.

The Assembly's Committee on the Church and Divorce has published its report in advance of the meeting of the Assembly of 1928, for the study of the Church. It shows that divorce is now competing with death as a dissolver of marriages, that one out of every six marriages in the United States ends in the divorce courts, and holds that Christ's teaching that adultery is the only ground for divorce should also be the doctrine of the Church.

The statistics for the year show an increase in the suspended list of members of 4,400. The total of communicants is 1,927,268, an increase for the year of 18,157, a falling off

PROTESTANT DENOMINATIONAL ACTIVITIES

of 17,095. There are 9,961 ministers and 9,497 churches, a decrease of 29 in the former and of 68 in the latter. The financial receipts amounted to \$62,782,907, a moderate increase.

Other Presbyterian Churches.—The United, the Southern, the Cumberland, are active and fairly prosperous, though each reports unusual losses from the dropping of members for non-support and non-attendance.

The nine Presbyterian bodies reported for 1926, 2,610,716 communicants, an increase of 48,730; 14,438 ministers, a gain of 4, and 15,504 churches, a loss of 88.

Union of Presbyterians in Scotland.—The projected union of the Church of Scotland, established, and the United Free Church, is proceeding by slow, but apparently, sure steps of progress. Both bodies seem to be anxious for it. The way has been somewhat simplified for the State Church, by parliamentary and other acts in recent years, allowing larger liberty to the "Auld Kirk." The Free Church, the fragment that remained outside the union of the Free and United Churches some years ago, is not included in the present plan. Last year a committee of 100 has been at work to prepare a Basis of Union, the approval of which has already been voted.

PROTESTANT EPISCOPALIANS

Faith and Order Movement.—The Protestant Episcopal Church had the satisfaction of seeing in 1927 the fruition of its plans for a world conference of Faith and Order, initiated at its General Convention in 1910, and designed to promote unity among the great Christian groups, including the Anglican Communion, Evangelical Protestant, the Eastern Orthodox and Roman Catholic bodies. (See Lausanne Conference on Christian Unity.) While its hope of persuading the Church of Rome to participate was not realized, it rejoices in the manifestation at Lausanne of Christian fellowship between the Eastern Orthodox, or Greek Communion, and the great Protestant group, and believes that the cause it has at heart was really advanced. It is encouraged, therefore, to go forward in the

path of privilege and duty. It was no small achievement, it feels, that so many and such diverse bodies were able to discuss agreements and differences without a break in fellowship and without a single withdrawal from its two-week sessions. The revised Prayer Book, though the legislation on it is not quite complete, is in use and seems to give satisfaction.

Anglo-Catholic Congresses.—These Catholic party congresses are held annually, both in the United States, and in England, and seem to be gaining in strength and in general recognition as a part of the Church.

The Protestant Episcopal Church reported for 1926, 5,793 ministers, 7,831 churches and 1,173,679 communicants, a gain of 8,768 for the year.

Cathedral in Washington.—Plan of a cathedral in the Capital City of the Nation has been launched, under the chairmanship of General John J. Pershing, with Senator George Wharton Pepper as executive chairman, and Andrew W. Mellon, Secretary of the U. S. Treasury, as treasurer. The announced purpose is to "create an enduring memorial of the national spirit of devotion and to enlist it in helpful Christian service." It includes not only a great minster for public worship but a college of preachers, schools for boys and girls and other agencies. The fund when complete will reach \$30,000,000, for construction, furnishing and endowment. Of this amount \$6,800,000 is sought at once.

OTHER PROTESTANT ORGANIZATIONS

The Salvation Army.—This body, projected by William Booth, in England, as an evangelistic force to reach classes in communities whom the churches had apparently failed to influence, mostly by street and open-air appeals, is growing much faster in the United States in number of members, than formerly. It is not, perhaps, a denomination, as it does not administer the sacraments, but it does effectively a wide work in evangelism and in charitable efforts, and is heartily welcomed by the churches generally. It observes the military form of organization, having

called its founder "General" and its heads in the United States "Commanders," with subalterns called colonels, majors, captains, lieutenants, and the like. Coming to this country from England, in 1880, it has unveiled a memorial tablet at the Battery, in New York, where the pioneers landed, the tablet setting forth that under direction of General Booth, the founder, Commissioner George S. Railton and seven women arrived March 10, 1880, and that the memorial is erected as an "expression of abounding gratitude on the part of multitudes who have reaped the fruitage of that glorious invasion." Field Major Emma Westbrook, sole survivor of the party of eight pioneers, was present with Commander Evangeline Booth, who unveiled the memorial.

The Salvation Army now has about 75,000 members in the United States, with a large corps of officers, and numerous organizations. The settlement work of the Army has grown in importance and its ministrations to those temporarily without shelter or meals, in finding them supper, lodging for a night, and breakfast, has been a blessing to the homeless. Also homes are opened for orphans and others. A bath, a bed, supper and breakfast are provided for the unfortunate who is then invited to make return by spending an hour or two in the wood-yard with the saw-buck. There are two branches in the United States, the Army itself, under direction of Commander Evangeline Booth, and the Volunteers, led by Commander Ballington Booth. Another of the Booth family, called the Marechale, has done similar work in Paris for many years.

Disciples of Christ.—This denomination dates its origin from 1809, when one of its founders, Thomas Campbell, issued a declaration and address to a "Christian Association," which established Brush Run Church, the first of what subsequently became a new organization designed to be non-sectarian on a biblical basis such as would not give rise to divisions. Afterward, Rev. Walter Scott (ministers did not then use the title), aiming to restore the "ancient gospel," made an order of faith, repentance,

baptism, remission of sins, gift of the Holy Spirit. This was proclaimed November 18, 1827, in a sermon in a Baptist Church. As this and other Baptist churches adopted this order a new denomination resulted.

Still another date is to be celebrated soon, that of the Pentecost when the first Christian Church was formed in June A.D. 30, in Jerusalem, under the preaching of Peter. The Disciples have appointed a Committee of fifteen—all well known church leaders—to prepare a program for the 1900th anniversary of the great event, all churches of Christ in all lands to be asked to observe it. The International Christian Convention, at Memphis, approved and recommended this celebration, calling upon all ministers and churches to set aside the fifty days preceding the date in spiritual preparation for a great revival movement.

The Y. M. C. A. and Collegiate Student Work.—The National Council of the Y. M. C. A. of the United States, at Chicago, took action authorizing the development of student work in 700 colleges and universities, 200 preparatory schools and 50 theological seminaries into a major division, lifting it to a status in self-government equal to that of the home division. This is interpreted to mean a new day in student work, which was begun fifty years ago. At the same time the National Council declared that a great need to counteract the growing materialism and realism in the colleges "is a restatement of religious truth in terms compatible with the best knowledge and the most scrupulous intellectual honesty." It was also urged that the best methods be sought of solving the issues arising out of the relations between men and women and conflicts between racial groups and industrial and international relations.

Latter-Day Saints.—Joseph Smith, recognized as the founder of the Church of Jesus Christ of Latter-Day Saints (Mormons), according to denominational history, launched the movement on the David Whitmere farm, in the town of Fayette, New York, near Waterloo. The denomi-

nation has purchased this property and will make it a Mormon shrine. A neighborhood sign states: "At that place the Church was organized April 6, 1830." The sign adds: "Part of the Mormon records were translated. The eleven special witnesses viewed the golden plates" from which the Book of Mormon was printed. There are two divisions of Mormons. Those of Utah and those of the Reorganized Church, with its headquarters at Lamoni, Iowa. The latter reports 77,926 members; the former 558,463. The Utah branch increased its members by nearly 23,000 in 1926.

WORLD CONGRESS OF LIBERALS

Congress at Prague.—The Unitarians of the United States, Great Britain and other European countries, together with other liberals in religions, held an international congress in Prague, Czechoslovakia, the new republic which has grown out of the World War, in September last. A large American delegation, men and women, were in attendance, including Rev. Dr. J. A. C. F. Auer, Dr. and Mrs. Louis A. Bauer, Dr. and Mrs. Preston Bradley, Rev. Eugene R. Shippen, and Dr. and Mrs. U. G. B. Pierce. At the beginning a commemorative hour was spent in recalling the virtues and abilities of those who had passed on, among them Dr. K. H. Roessing, of Leyden University, late President of the Congress and the Patriarch of the Czechoslovakian National Church.

Two papers discussed learnedly the "Contribution of Philosophy and Psychology to the Spiritual Interpretation of Life and the Idea of God," leading to the conclusion that theism is the only sound and rational theory explaining life—a theism that must be of the experience. No theoretical religion, it was held, can capture the world until it finds ethical ex-

pression. Professor Varga, of the Unitarian College of Koloszar, Transylvania, claimed that the eternal search for God is an evidence of the reality of the divine and faith is its own justification. Bishop Prochazka gave an address on the Czechoslovakian National Church. One evening was devoted by the Congress to the Czech opera the "Bartered Bride," given in its honor.

A session, occupied with a conference on the Worship and Culture of the National Church, brought out some new developments in Protestantism, including the revival of Hussite forms, departure from the Roman Church and changes in the liturgy. The Lord's Supper, while modeled on the Roman mass, is not interpreted in the Catholic sense but as a historical representation of a moving scene. It is regarded as the central object in worship. Non-biblical readings are introduced from thinkers of various nations and times. Pastor Tschirm, of Wiesbaden, chairman of the Federation of Free Religious Communities, told how radical Germans are trying to work out a new cult both rational and artistic on symbolic lines, for baptism, confirmation, consecration, marriage and the burial service. Prof. Rudolph Otto, author of "The Idea of the Holy," took a conservative view of Church and Bible and held that experience is not merely to be described but shared through the sacraments, and that the Cross and the Cup are themselves a creed, though not in the Catholic sense. The mystery of religion cannot be fully rationalized, but symbolic acts as well as preaching are necessary. This idea, he embodies in a new book on "The Year of the Church in Readings and Prayers." At the close of the Congress Chief Justice Taft was elected President by acclamation.

ROMAN CATHOLICS

By JOHN B. KELLY

SPIRITUAL DIRECTOR, THE CATHOLIC WRITERS GUILD OF AMERICA

CHURCH WORK AND POLICIES

The Pope.—The directions of the Supreme Pontiff settle the emphasis in the work of the Church; and, while the work is essentially the same throughout the centuries, that of each age has its own particular coloring. Of Pope Pius XI it has been well said: "His large and sure grasp of political and governmental principles; his deep interest in scholarship; his anxiety to commend and encourage the work done by laymen; his magnificent appeal to those who reverence the ideal of a united Christendom,—these things are so obvious and so good, that nobody can help seeing and admiring them"; and it is largely these things which have given color to the work of the Catholic Church during the past year.

Feast of Christ Encyclical.—The Encyclical, establishing the Feast of Christ the King, is profoundly significant, asserting as it does, in unmistakable terms, the Kingship of our Blessed Lord over all men, and laying down liturgical religion as the proper form of the common life, and setting forth the right to teach and the right to worship as indissolubly bound up in each other, so much so that any divorcement of the one from the other must mean vital damage to both. In its basal truth as well as in its Catholic spirit, this Encyclical makes for a more united world.

THE CHURCH AND DEMOCRACY

France.—The condemnation of *l'Action Française* has meant troublous times for French Catholics. The Church has definitely set herself against a strong, aggressive, monarchical party in France, since that party has wilfully tried to make it appear that there is, necessarily, direct conflict between the Church and democracy. The leader in this misleading attempt has been Charles Maurras, an avowed agnostic, who, politically, has given his support to the Church because he believes it is

the form in which French tradition has been cast. Apart from the fundamental untruth in Maurras' position, the Holy Father saw clearly that this course of *l'Action Française* could lead only to a dangerous intensification of nationalism, which would be bound to become a source of international discord. The break between Rome and *l'Action Française* is, therefore, a most valuable commentary upon the Catholic attitude towards political principle.

Smith-Marshall Letters.—In a somewhat different form, much this same question of the Church and democracy has been raised in our own land, when the gauntlet was thrown down to Governor Alfred E. Smith of New York, by Charles Marshall in an article in *The Atlantic Monthly*. This article and Governor Smith's reply to it focused the attention of the whole country. In a calm, clear, cogent letter to the public press, dignified and convincing, he met the issues raised by Mr. Marshall, and upset every position taken by him in his vain endeavor to belittle Catholic loyalty to Flag and Country. So powerfully, yet simply, did Governor Smith assert Catholic loyalty, wholehearted and steadfast, refuting all his opponent's arguments without any appeal to religious prejudice, that his letter may well be classed as a great Catholic document.

SITUATION IN MEXICO

In Mexico, the riot of bitter persecution of the Church continues, and is marked by gross savagery. It is a nearby conflict between Christianity and Bolshevism; and, witnessing events in Mexico, one can understand something of the terrible sufferings of the Greek Church in Russia in recent years. Lawlessness, injustice and ferocity have marked Mexico's treatment of the Church. The hierarchy in our own country have urged constant prayer on the part of the faith-

ful in behalf of the suffering brethren in Mexico. The Knights of Columbus, at the annual meeting of the Supreme Convention, again raised earnest voices in protest against the outrages being perpetrated, calling on all good men in our land, irrespective of creedal affinity, to join them.

MISSION WORK

China.—In Missionary work, the Church has pushed forward, steadily and confidently, even though new, vast obstacles have arisen in her path. China has been torn asunder by civil war, on a huge, barbaric scale, and this war has raged during the whole of the past year. It is too early to forecast the exact effects of this conflict on Catholic missions in China, where, for centuries, Catholic missionaries have been toiling among its four hundred million people.

Near East.—But in the Near East Missions much has been done which can be estimated. On September 15th, the Catholic Bishops convened in Washington, D. C., and a Near East Welfare Association was established, the chairman of whose Board of Directors is Cardinal O'Connell, whose Protector is Cardinal Hayes, and whose Managing President is Father Edmund A. Walsh S.J., Vice-President of Georgetown University. This organization has already collected, in ninety-one dioceses, more than one million dollars, and sent the sum to the Holy Father as America's contribution to aid him in bringing peace and unity to the strayed sheep of Russia, the Balkans and the whole Levant.

The Home and Foreign Missions Committee, headed by Cardinal Mundelein, has reported that already forty-five dioceses have contributed to its funds; and a resolution has been adopted "to have a branch in every diocese, in which adults will contribute one dollar, and young people fifty cents." Forty per cent of the total sum raised will be devoted to Home Missions among Indians, Mexicans and Negroes, while the remaining sixty per cent will be forwarded to Rome for Foreign Missions.

CHURCH ORGANIZATIONS

In addition to the Knights of Columbus, already mentioned, there are many other Catholic organizations, of national scope, doing splendid service in different ways for the Church. There are the National Council of Catholic Men, the National Council of Catholic Women, the Foresters, the A. O. H. and its Ladies' Auxiliary, the Catholic Benevolent Legion, the Knights of St. John, the Knights of St. George, the Catholic Daughters of America, the Daughters of Isabella, and the Federated Colored Catholics,—all of which are doing effective work in their varied spheres.

The names of the following organizations indicate, as briefly as possible, the nature of their work: The Catholic Education Association, the Social Action Department of the N. C. W. C., the Catholic Rural Life Conference, the Catholic Actors' Guild, the Catholic Conference on Industrial Problems, the National Catholic Charities, the Catholic Writers Guild, the Catholic Hospital Association, the Catholic Press Association, the Catholic Group of the Conference on International Peace, the Catholic Students' Mission Crusade, the Catholic Philosophic Association, and four Catholic Historical Societies, with their four periodical publications. These are but some of the many organizations aiding in the carrying forward of the work of the Church.

CATHOLIC SCHOLARSHIP

In the world at large, Catholic scholarship has shown marked achievements. This past year has witnessed the publication of the nineteenth volume of Pastor's historically accurate and exhaustive *History of the Popes*; the observance of the Centenary of Louvain University, at which the address of M. Joseph Bedier clearly outlined the scholastic creed of the late Cardinal Mercier; the continuation of the work of the Bollandists and of the Société Scientifique in Belgium; the first issue of the notable series of historical and apologetic books, *La Vie Chrétienne*,

in France; the publication of the first volume of *Universal Knowledge* in this country; and the steady progress of the able *Calvert Series* in England, where, during 1927, Catholics were relieved by parliamentary action of certain legal disabilities from which they had suffered for centuries.

SPIRITUAL ACTIVITIES

In addition to all these varied activities, the main work of the Church, carried on by her clergy, has

not in any way been overlooked,—her sacramental care of souls; and Masses, daily and Sunday, which are “the founts of the soul’s progress,” have not been abated; and during the year 1927, the Church in our own land has dealt faithfully and confidently, with twenty-four million Catholics, as individuals rather than as impersonal groups, and in doing this, the Church has made her main contribution to personal progress in the spiritual life, and also to national unity and prosperity.

JUDAISM AND JEWISH COMMUNAL ACTIVITIES

BY BERNARD G. RICHARDS

EXECUTIVE SECRETARY, AMERICAN JEWISH CONGRESS

GENERAL SCOPE OF WORK

Summary.—Jewish Communal relations and philanthropic activities for 1927 may be briefly summed up into a number of distinct divisions, substantially as follows: 1. Religious education for the young and the training of rabbis, teachers and social workers. 2. The building of new synagogues and temples and the spread of the popular movement for the establishment of community centers. 3. Work of charity among the needy at home and the destitute abroad still suffering from the aftermath of the great war. 4. Support for the upbuilding of the Jewish National Homeland in Palestine. 5. Efforts to protect the interests and establish the rights of Jewish Minorities in Eastern European lands.

For the furtherance of these various purposes, a number of special organizations have been called into being, the different temples and synagogues being federated into National bodies and other federations, of scattered groups having identical aims, being formed gradually; all these bodies, while not always coordinating their efforts, are nevertheless laboring with the same ideals in view, and under the impetus of identical Jewish beliefs and teachings.

RELIGIOUS EDUCATION

Schools and Endowments.—Under the heading of Religious Education,

the Jewish Educational Association of New York, Israel Unterberg, President, which, under the active leadership of Bernard Semel, Honorary Secretary, encourages the establishment of and endows various schools, has campaigned and secured larger funds for its activities, these being paralleled by different bodies in a number of large cities West and South. In several of these cities, like Chicago, Boston, Cleveland, Detroit, St. Louis, San Francisco, etc., there exist colleges or schools for the training of religious teachers for the requirements of the various schools in different communities, those which are attached to synagogues and temples as well as those which are conducted independently by associations of Jewish men and women especially interested in the subject.

Theological Seminaries.—The four large Jewish colleges for the training of rabbis and teachers of religion have witnessed a year of considerable activity and progress, two of these institutions, namely the Hebrew Union College in Cincinnati, Dr. Julian Morgenstern, President, and the Jewish Theological Seminary of America, New York City, Dr. Cyrus Adler, President, have, as heretofore, made significant additions to the remarkable collections of Jewish books and manuscripts in their libraries. The newer Jewish Institute of Religion, New York City, Dr. Stephen

S. Wise, President, has entered upon its sixth year of activities with considerable enlargement of its faculty and increase in the student body.

The ultra orthodox Yeshiva, or Isaac Elchanan Seminary, Dr. Bernard Revel, President, has gone ahead with its elaborate plans of transforming the old-time Yeshiva into a more up-to-date Yeshiva College, which combine a Jewish and Talmudic education with a modern course of college studies and for the first time create a college modeled along parochial lines. The new building is now being erected at Amsterdam Avenue and 124th Street, New York City.

SYNAGOGUES AND COMMUNITY CENTERS

Temple Emanu-el and Temple Beth-el.—An unusual number of new temples and synagogues have been built in different cities during the past year and perhaps the most important change transpiring during the period was the amalgamation of the two premier reformed congregations in the United States—Temple Emanu-el, formerly situated at Fifth Avenue and 43d Street, New York City, and Temple Beth-el, still located at Fifth Avenue and 76th Street, the plan being to have the new joint organization erect one large house of worship and social center at Fifth Avenue and 65th Street, the former site of the Astor mansion. This amalgamation, accomplished under the leadership of Louis Marshall, President of Temple Emanu-el, was not brought about without a struggle on the part of dissatisfied members on both sides and the razing of the beautiful Moorish temple at 43d Street and Fifth Avenue, a distinctive landmark for over half a century, continues to be a subject of comment.

Training Bodies.—In the work of the synagogue and the extension of its influence in the direction of religious training, bodies like the Union of American Hebrew Congregations, Charles Shohl, Honorary President, representing the reformed wing of Judaism; United Synagogue of America, Herman Abramowitz, President, speaking for the conservative or the

middle-of-the-road elements; and the Union of Orthodox Jewish Congregations of America, Herbert S. Goldstein, President, aiming to conserve the old and traditional attitude, have played an important rôle during the past year. Among the newer forces in the religious life of the Jews of America are the National Federation of Temple Sisterhoods, Mrs. J. Walter Freiberg, President, and the National Federation of Temple Brotherhoods, Roger W. Straus, President.

Community Centers.—The popular movement for the creation of Jewish community centers, serving in most instances as combined houses of worship, religious schools and places of recreation, has made rapid strides in a considerable number of cities. The Jewish Welfare Boards, Justice Irving Lehman, President, a joint outgrowth of early centralized activities of the Young Men's Hebrew Associations with later ministrations to Jewish members of the United States Army and Navy, especially during the World War, now directs its chief efforts towards the encouragement of the establishment of these and other Jewish social centers, and the development of educational and literary programs for them.

PALESTINE COLONIZATION

Basle Zionist Congress.—The large numbers of American Jews who are taking part in the world Zionist movement, whether from religious, racial or national motives, were fully represented at the bi-annual Zionist Congress held in September at Basle, Switzerland, the seat of the first Congress in 1897, through a delegation sent by the Zionist Organization of America, Louis Lipsky, President. At this session of delegates from all parts of the world, at which much difference of opinion developed as to future policy, a number of recommendations of the Americans calling for reforms in the work of colonization were adopted. Further sanction was given to the extension of the projected Jewish Agency, a new body comprised of Zionists and non-Zionists, who are to cooperate in the furtherance of the upbuilding of a Jewish Palestine.

XVII. RELIGION AND RELIGIOUS ORGANIZATIONS

The entrance into the Agency of an important American group, hitherto unassociated with Zionism and headed by Louis Marshall and Felix M. Warburg, was reported on, while announcement was made of the participation of similar groups from other lands. In anticipation of future work, under the auspices of the Agency, a Commission of experts had been sent to Palestine to study conditions and make recommendations as to future operations. Meanwhile, the United Palestine Appeal, Dr. Stephen S. Wise, Honorary Chairman; Judge Julian W. Mack, Honorary Vice-Chairman, and Judge William E. Lewis, Chairman, is making its annual drive for funds for current Palestinian activities.

FOREIGN ACTIVITIES

Relief Abroad.—The American Joint Distribution Committee has, under the Chairmanship of Felix M. Warburg, continued its extensive work of relief among the Jewish communities of Eastern Europe, which assistance is still made necessary by post-war conditions. As one of the objects of a new campaign for a fund of \$25,000,000, led by David A. Brown, a large agricultural enterprise of placing Jewish families on the land is being carried through by the same organization and its constituent bodies in Soviet Russia.

Struggle for Equal Rights.—A significant occurrence in the work for the protection of the full rights of Jews in Eastern European lands in accordance with the guarantees of the Treaties of Versailles, was the holding of a Conference on Jewish Rights in the month of August in Zurich, Switzerland, under the joint auspices of the American Jewish Congress, Dr. Stephen S. Wise, President, and the Committee on Jewish Delegations, Nahum Sokolow, President, dating back to Jewish representations

at the Peace Conference in 1919. This Conference, which was representative of Jewish organizations in twelve different lands—owing to differences of opinion, certain influential Jewish groups here and abroad failed to take part—resulted in the formation of the Council for the Rights of Jewish Minorities, Nahum Sokolow, President, with permanent headquarters at Geneva.

Roumania.—Renewed attacks upon the Jews in Roumania have formed the basis of public protests on the part of the American Jewish Congress and affiliated organizations, and these and similar subjects have also occupied the American Jewish Committee, Louis Marshall, President.

FORD INCIDENT

The combatting of anti-Semitism and such misrepresentations involved in publications and moving pictures, animated by racial prejudice, have been the subject of activities by the above organizations as well as the Independent Order B'nai B'rith, Arthur M. Cohen, President. An encouraging development in the work of anti-defamation was the withdrawal by Henry Ford of all anti-Semitic charges against the Jews published for a number of years in his weekly, *The Dearborn Independent*.

A dramatic incident in Mr. Ford's anti-Semitic campaign was the suit for libel brought against him by Aaron Sapiro, noted attorney and expert in cooperative marketing, who, with Bernard M. Baruch, Julius Rosenwald and Eugene Meyer, Jr., and others, were involved in Mr. Ford's charges of an alleged Jewish conspiracy to oppress Christian peoples and it is generally believed that Mr. Sapiro's brave fight for the vindication of the truth was chiefly responsible for Mr. Ford's full retraction made on June 30.

OTHER RELIGIOUS ORGANIZATIONS

OTHER RELIGIOUS ORGANIZATIONS

BY H. K. CARROLL

GENERAL STATISTICIAN OF THE CHURCHES

GREEK ORTHODOX CATHOLICS

The Russian Church.—The condition of this body, the largest of the Oriental Christian bodies, is still unsettled under Soviet Government. It continues in a state of division. Metropolitan Platon, head of the Orthodox division in America, has issued a statement, approved by his diocesan Council, to the effect that ten years of soviet rule has deprived the Church in Russia of its juristic status, taken away its properties, deprived the clergy of their public recognition as such, closed its educational institutions, orphanages, hospitals, monasteries, confiscated most of its libraries, divested priests of the right to teach religion to the children, taken away many of its treasures, exiled or imprisoned hundreds of priests and bishops. By decision of the courts a few years ago, part of the church property in America was turned over to a soviet metropolitan, Kedrovsky.

In Russia, a synodical party, formerly the Living Church, which works as far as possible in harmony with the Soviet, is said to have about 35,000,000 of Church followers in more or less sympathy with it, while 15,000,000 still adhere to the patriarchal party, which has little opportunity to do effective ecclesiastical work. It names, now and then, a Patriarch in succession to Tikhon, but the most that any of these metropolitans seem able to do is to issue a proclamation which is practically without effect.

One of the astonishing things which the Soviet has done is to grant to certain of its own people the right to print Bibles on the government presses of Leningrad. To these groups the American Bible Society furnished plates of the whole Bible in Russian from which an edition of 25,000 copies was printed. Heretofore Russia was a sealed country to importation of the Bible.

Tenth Anniversary of Soviet.—Of religious, as well as political sig-

nificance, was the celebration of the tenth anniversary, last fall, of the Soviet regime. It was signalized by a division in the communist party and the expulsion of oppositionists to the Stalin government, of such former leaders as Trotsky, Zinoviev, Kainenev and Kakovsky, who claim to be the true followers of Lenin and originators of the Bolshevik movement. Stalin is said by them to be endeavoring to harmonize Soviet with capitalism and to win the favor of England, France and other European governments. Meantime the disestablished, disrupted Orthodox Church wonders what the outcome for religion is going to be.

New Russian Census.—Some results of the new census taken in December, 1926, the first complete enumeration under the Soviet regime, show that the Republic has 146,000,000 population, of which 26,000,000 is urban. Decreases from the partial census of 1920 are reported from the provinces of Samara, Volga (German), Orenberg, and the Tartar and the Bashkir Republic. These decreases are believed to be due to the famine and pestilence of 1921. Nothing is reported thus far enabling an estimate to be made of the population of the Church of Russia, either of the Orthodox, the Orthodox Liberal, or the Protestant Churches, but it is known that most of the latter have increased.

Czechoslovakia.—President Maza-ryk, considered by many as the most advanced thinker among the new leaders who have come to the front since the war, has taken the position, which his new state seems to accept, that the present and future lie not with Caesar but with Christ, that the Man of Galilee has the future in his power. He says that the Roman Catholic Church has lost 724,507 citizens since the Republic was organized, that over half a million of them have become Protestants who now have nearly a million communi-

COGNATE SOCIETIES

NATIONAL CHURCHES

- AMERICAN UNITARIAN ASSOCIATION.—25 Beacon St., Boston, Mass.
- AMERICAN CONGREGATIONAL ASSOCIATION.—14 Beacon St., Boston, Mass.
- ANGLICAN UNIVERSAL CHURCH OF CHRIST IN THE U. S. A.—22 E. 38th St., New York, N. Y.
- BOARD OF DIRECTORS OF THE GENERAL SYNOD OF THE REFORMED CHURCH IN AMERICA.—25 E. 22nd St., New York, N. Y.
- CENTENARY CONSERVATION COMMITTEE OF THE METHODIST EPISCOPAL CHURCH.—111 Fifth Ave., New York, N. Y.
- CHRISTIAN SCIENCE CHURCH.
- CONGREGATIONAL CONFERENCE, INC.—287 Fourth Ave., New York, N. Y.
- CONGREGATIONAL NATIONAL COUNCIL.—287 Fourth Ave., New York, N. Y.
- FREETHINKERS' SOCIETY OF NEW YORK.—226 W. 58th St., New York, N. Y.
- FRIENDS' GENERAL CONFERENCE.—140 N. 15th St., Philadelphia, Pa.
- GENERAL CONFERENCE OF SEVENTH-DAY ADVENTISTS.—Takoma Park, Washington, D. C.
- GENERAL COUNCIL OF THE PRESBYTERIAN CHURCH IN THE U. S. A.—156 Fifth Ave., New York, N. Y.
- NATIONAL SPIRITUALIST ASSOCIATION.—600 Penn Ave., S. E., Washington, D. C.
- NATIONAL LUTHERAN COUNCIL IN AMERICA.—437 Fifth Ave., New York City.
- NORTHERN BAPTIST CONVENTION.—5109 Waterman Ave., St. Louis, Mo.
- SOCIETY FOR ETHICAL CULTURE OF NEW YORK.—2 W. 64th St., New York, N. Y.
- THEOSOPHICAL SOCIETY, AMERICAN SECTION.—826 Oakdale Ave., Chicago, Ill.
- UNION OF AMERICAN HEBREW CONGREGATIONS.—Merchants' Building, Cincinnati, O.
- UNION OF ORTHODOX CONGREGATIONS OF AMERICA.—276 Fifth Ave., New York, N. Y.
- UNION OF ORTHODOX JEWISH CONGRE-

- GATIONS OF AMERICA.—131 West 86th St., New York, N. Y.
- UNITED LUTHERAN CHURCH IN AMERICA.—437 Fifth Ave., New York, N. Y.
- UNIVERSALIST GENERAL CONVENTION.—176 Newburg St., Boston, Mass.
- VEDANTA SOCIETY.—34 W. 71st St., New York, N. Y.
- VOLUNTEERS OF AMERICA.—34 W. 28th St., New York, N. Y.

INTERNATIONAL ORGANIZATIONS

- ALLIANCE OF REFORMED CHURCHES THROUGHOUT THE WORLD HOLDING THE PRESBYTERIAN SYSTEM.—510 Witherspoon Building, Philadelphia, Pa.
- ASSOCIATION FOR THE PROMOTION OF CHRISTIAN UNITY.—504 N. Fulton Avenue, Baltimore, Md.
- BAPTIST WORLD ALLIANCE.—Bates College, Lewiston, Me.
- CENTRAL BUREAU OF EVANGELICAL CHURCHES IN EUROPE.—105 E. 22nd St., New York, N. Y.
- COMMITTEE ON COOPERATION IN LATIN AMERICA.—25 Madison Ave., New York, N. Y.
- CONTINUATION COMMITTEE OF WORLD CONFERENCE ON FAITH AND ORDER.—P.O. Box 226, Boston, Mass.
- ECUMENICAL METHODIST CONFERENCE.—145 Westervelt Ave., Plainfield, N. J.
- INTERNATIONAL ASSOCIATION OF DAILY VACATION BIBLE SCHOOLS.—381 Fourth Ave., New York, N. Y.
- INTERNATIONAL CONGREGATIONAL COUNCIL.—14 Beacon St., Boston, Mass.
- INTERNATIONAL CONGRESS OF RELIGIOUS LIBERALS.—25 Beacon St., Boston, Mass.
- INTERNATIONAL COUNCIL OF RELIGIOUS EDUCATION.—1516 Mallery Bldg., 5 S. Wabash Ave., Chicago, Ill.
- INTERNATIONAL EVANGELISTIC BUREAU OF THE U. S. A.—1111 Walnut St., Cairo, Ill.
- INTERNATIONAL SOCIETY OF CHRISTIAN ENDEAVOR.—41 Mt. Vernon St., Boston, Mass.
- LAMBETH CONFERENCE, ANGLICAN

COGNATE SOCIETIES

COMMUNION.—Bishop of Winchester, England.
 LUTHERAN WORLD CONVENTION.—437 Fifth Ave., New York, N. Y.
 PROTESTANT UNITY LEAGUE.—500 Fifth Ave., New York, N. Y.
 UNIVERSAL CHRISTIAN CONFERENCE ON LIFE AND WORK.—70 Fifth Ave., New York, N. Y.
 WORLD'S STUDENT CHRISTIAN FEDERATION.—347 Madison Ave., New York, N. Y.
 WORLD'S SUNDAY SCHOOL ASSOCIATION.—1 Madison Ave., New York, N. Y.

INTERCHURCH ORGANIZATIONS

AMERICAN SECULAR UNION.—P. O. Box 1156, Chicago, Ill.
 AMERICAN SUNDAY SCHOOL UNION.—1816 Chestnut St., Philadelphia, Pa.
 CHAPLAINS' AID ASSOCIATION.—401 W. 59th St., New York, N. Y.
 CHRISTIAN UNITY FOUNDATION.—70 Fifth Ave., New York, N. Y.
 CHURCH PEACE UNION.—70 Fifth Ave., New York, N. Y.
 COMMISSION OF REFERENCE AND COUNCIL COMMITTEES.—25 Madison Ave., New York, N. Y.
 CONFERENCE OF THEOLOGICAL SEMINARIES AND COLLEGES.—Lancaster, Pa.
 COUNCIL OF CHURCH BOARDS OF EDUCATION.—111 Fifth Ave., New York, N. Y.
 FEDERAL COUNCIL OF CHURCHES OF CHRIST IN AMERICA.—105 E. 22nd St., New York, N. Y.
 FELLOWSHIP OF RECONCILIATION.—Bible House, New York, N. Y.
 FEDERATION OF CHURCHES.—71 W. 23rd St., New York, N. Y.
 INTERDENOMINATIONAL EVANGELISTIC ASSOCIATION.—Winona Lake, Indiana.
 NATIONAL COUNCIL OF PROTESTANT EPISCOPAL CHURCHES.—281 Fourth Ave., New York, N. Y.
 NATIONAL FEDERATION OF RELIGIOUS LIBERALS.—700 Oakwood Boulevard, Chicago, Ill.

AUXILIARY ORGANIZATIONS

CATHOLIC CHURCH EXTENSION SOCIETY OF THE U. S. A.—180 N. Wabash Ave., Chicago, Ill.

CATHOLIC GUARDIAN SOCIETY.—130 W. 37th St., New York, N. Y.
 CATHOLIC PROTECTIVE SOCIETY.—477 Madison Ave., New York, N. Y.
 EPWORTH LEAGUE OF THE METHODIST EPISCOPAL CHURCH.—740 Rush St., Chicago, Ill.
 KINGS DAUGHTERS AND SONS.—280 Madison Ave., New York, N. Y.
 LORD'S DAY ALLIANCE.—156 Fifth Ave., New York, N. Y.
 PRISON EVANGEL ASSOCIATION.—156 Fifth Ave., New York, N. Y.
 SUNDAY SCHOOL COMMISSION, INC.—416 Lafayette St., New York, N. Y.
 WOMAN'S CHRISTIAN TEMPERANCE UNION.—Evanston, Ill.
 WOMAN'S NATIONAL SABBATH ALLIANCE.—156 Fifth Ave., New York, N. Y.
 YOUNG MEN'S CHRISTIAN ASSOCIATION.—347 Madison Ave., New York, N. Y.
 YOUNG WOMEN'S CHRISTIAN ASSOCIATION.—600 Lexington Ave., New York, N. Y.
 UNITED SOCIETY OF CHRISTIAN ENDEAVOR.—411 Mt. Vernon St., Boston, Mass.

RELIGIOUS PUBLICATIONS

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 AMERICAN BIBLE SOCIETY.—Bible House, New York, N. Y.
 AMERICAN TRACT SOCIETY.—7 W. 45th St., New York, N. Y.
 CHICAGO TRACT SOCIETY.—440 Dearborn St., Chicago, Ill.
 GIDEONS.—140 S. Dearborn St., Chicago, Ill.
 INSTITUTE OF SOCIAL AND RELIGIOUS RESEARCH.—370 Seventh Ave., New York, N. Y.
 RELIGIOUS EDUCATION ASSOCIATION.—308 N. Michigan Ave., Chicago, Ill.
 NATIONAL TESTAMENT AND TRACT LEAGUE.—200 Kellogg Bldg., Washington, D. C.
 POCKET TESTAMENT LEAGUE.—156 Fifth Ave., New York, N. Y.
 RELIGIOUS PUBLICITY.—701 W. 177th St., New York, N. Y.
 SOCIETY FOR THE PROPAGATION OF THE FAITH.—343 Lexington Ave., New York, N. Y.
 SOCIETY OF BIBLICAL LITERATURE AND

XVII. RELIGION AND RELIGIOUS ORGANIZATIONS

EXEGESIS.—Broadway at 120th St.,
New York, N. Y.

MISSIONARY

AMERICAN BOARD OF COMMISSIONERS
FOR FOREIGN MISSIONS.—14 Beacon
St., Boston, Mass.

AMERICAN McALL ASSOCIATION.—
1710 Chestnut St., Philadelphia,
Pa.

CHRISTIAN AND MISSIONARY ALLI-
ANCE.—260 W. 44th St., New York,
N. Y.

CONTINUATION COMMITTEE OF THE
WORLD MISSIONARY CONFERENCE.—
25 Madison Ave., New York, N. Y.

COUNCIL OF WOMEN FOR HOME MIS-
SIONS.—156 Fifth Ave., New York,
N. Y.

FEDERATION OF WOMEN'S BOARDS OF
FOREIGN MISSIONS.—25 Madison
Ave., New York, N. Y.

FOREIGN MISSIONS CONFERENCE OF
NORTH AMERICA.—25 Madison Ave.,
New York, N. Y.

INTERNATIONAL MISSIONARY CONFER-
ENCE.—347 Madison Ave., New
York, N. Y.

INTERNATIONAL MISSIONARY UNION.
—71 W. 23rd St., New York, N. Y.

NEAR EAST RELIEF.—151 Fifth Ave.,
New York, N. Y.

STUDENT VOLUNTEER MOVEMENT FOR
FOREIGN MISSIONS.—25 Madison
Ave., New York, N. Y.

WOMAN'S UNION MISSIONARY SO-
CIETY.—67 Bible House, New York,
N. Y.

PART SIX

SCIENCE—PRINCIPLES AND APPLICATION

DIVISION XVIII

MATHEMATICS AND ASTRONOMY

MATHEMATICS

BY TOMLINSON FORT

PROFESSOR OF MATHEMATICS, LEHIGH UNIVERSITY

AMERICAN MATHEMATICAL SOCIETY

Meetings.—The amount of mathematical research in America during 1927 is testified to by the fact that three hundred and ninety-five research papers were presented to the American Mathematical Society during the year. Meetings of the Society were as follows: New York, February 26; Chicago, April 15, 16; New York, May 7; Madison, September 6-10; New York, October 29; Nashville, December 28, 29. Sectional meetings were held at Stanford University, April 2; Vancouver, June 18; St. Louis, November 26. The Nashville meeting was especially noteworthy as being the first general meeting held in the South.

Discussion of Papers.—The papers presented were by many authors scattered over the United States and Canada. When the names and titles are read, however, the fact is brought out that the major portion of this great production was inspired by the leadership of a very few men. For example the number of papers on the theory of numbers and on algebras that were written by past students of Prof. L. E. Dickson of Chicago is noteworthy. The same is true of the writers on differential geometry and their relation to Prof. L. P. Eisenhart of Princeton. Writers on expansion problems generally have studied with Prof. G. Birkhoff or

with the late Prof. Maxime Bôcher of Harvard; as have writers on point sets and analysis situs with Prof. R. L. Moore of Texas.

General analysis had its inception with Prof. E. H. Moore of Chicago, and writers on it have universally been his students. The number of writers on general analysis seems, however, to be on the decline. It is also noteworthy that research has been done almost wholly by university professors. There are a considerable number of mathematicians working for commercial companies but their output has been small. In fact throughout the history of the subject in America the research of an individual has slowed down as soon as his university connection has ceased, soon coming to a complete close.

Specialized Fields.—In addition to activity in the fields just mentioned American mathematicians have caused an advance in mechanics, relativity, mathematics of the atom and in various other specialized fields. The present world-wide interest in physics is accompanied by mathematical study. In fact relativity, quantum theory, etc., are highly specialized mathematical subjects. The work of D. Struik and N. Wiener of Massachusetts Institute of Technology during 1927 on the quantum theory as a corollary to relativity is

mentioned in this connection, also that of Oskar Klein on five-dimensional relativity. Some attention was given to computing which is not usual with American mathematicians. This is witnessed by the publication of a new table of the zeros of the Bessel's functions by H. T. Davis and W. J. Kirkham.

The Summer Meeting at Madison was featured by a series of Colloquium lectures by E. T. Bell of California Institute of Technology and a series by Anna Pell Wheeler of Bryn Mawr. The first were on "Algebraic Arithmetic" and the second on the "Theory of Quadratic Forms in Infinitely many Variables." This is particularly notable as being the first time that a woman has given a colloquium lecture before a meeting of the American Mathematical Society.

NEWTON BICENTENARY

The bicentenary of the death of Sir Isaac Newton was celebrated by the History of Science Society in conjunction with the American Mathematical Society and other organizations. Addresses were given at the American Museum of Natural History in New York by D. E. Smith, E. W. Brown, George Birkhoff, M. I. Pupin and others on November 25 and 26. A very large exhibit of portraits, medals, and manuscripts of Newton as well as documents relating to his work and that of his contemporaries was on exhibition at the Museum from November 25 to December 16.

ADDRESSES AND LECTURES

Public addresses by well-known mathematicians during the year were the Josiah Williard Gibbs lecture by E. W. Brown of Yale on "Resonance in the Solar System"; "Separation Theorems and their Relation to Analysis Situs," by J. R. Kline of the University of Pennsylvania; "Some Phases of General Topology," by E. W. Chittenden of the University of Iowa; "Modern Hydrodynamical Theory with Special Reference to Aerodynamics," by F. D. Murnaghan of Johns Hopkins; "Mathematical Rigor Past and Present," by James Pierpont of Yale; "The Notion of Prob-

able Error in Elementary Statistics," by E. V. Huntington of Harvard; "The Human Significance of Mathematics," by Dunham Jackson of Minnesota and "Some Philosophic Aspects of Mathematics," by Arnold Dresden of Swarthmore.

Visiting Mathematicians in America during the year were Prof. Constantin Caratheodory of Munich, Prof. E. Schrödinger of Zurich and Prof. Peter Debye of Zurich. Prof. Caratheodory was chosen Visiting Lecturer for the American Mathematical Society, a new office.

HISTORY AND BIBLIOGRAPHY

History of mathematics continued to be of widespread interest. Mention has already been made of the celebration of the bicentenary of the death of Newton. The number of papers particularly on the history of oriental mathematics published in the *American Mathematical Monthly* is interesting. Historical research on mathematics is also particularly published in *Isis*, and occasionally in the *Bulletin of the American Mathematical Society*.

New Books.—There is great difficulty in getting mathematical books, other than textbooks for elementary instruction, published. The publishing firms are generally unwilling to undergo the slightest risk on an advanced book due to its necessarily limited number of readers. This is in spite of the large sums that they realize from texts for collegiate and elementary instruction which ultimately are dependent upon advanced mathematics. For this reason if for no other the number of noteworthy books by American authors is always small. The American Mathematical Society publishes its Colloquium Lectures and certain other volumes in its "Colloquium Series" so far as money is available. During 1927 a book by G. C. Evans of Rice Institute and one by E. T. Bell of California Institute of Technology were thus published. The first was *Logarithmic Potential Theory* and the second on *Algebraic Arithmetic*. The Third Carus Monograph on *Statistics* by H. L. Rietz of Iowa appeared during the year. New textbooks by var-

ious authors and commercial publishers appeared from time to time.

Journals.—The major publication of mathematical research and advanced exposition is in the periodicals. The leading journals in America are *The Transactions of the American Mathematical Society*, 800 pages per annum, *The Bulletin of the American Mathematical Society*, 800 pages

per annum, *The American Journal of Mathematics*, 600 pages per annum, *Annals of Mathematics*, 400 pages per annum, and the *American Mathematical Monthly*, 450 pages. The expense of this published material falls primarily on the American Mathematical Society and makes its plea for more adequate endowment readily understandable.

ASTRONOMY

BY RAYMOND S. DUGAN

PRINCETON UNIVERSITY OBSERVATORY

OBSERVATORIES

South Africa.—The concentration of astronomical equipment in South Africa for an attack on the southern sky is one of the most interesting developments of recent years. The Observatory of Good Hope and the Union Observatory at Johannesburg, the latter containing a 26½-inch telescope recently installed, have long been active. Yale University has its 26-inch telescope in regular operation at Johannesburg. The principal program is the taking of parallax plates to find the distances of stars but, in addition, photographs are being taken of the southern "Selected Areas," to furnish data on the distribution of stars in the universe; of faint Cepheid variables, to determine the proper motions of this important class of stars; and of the satellites of Jupiter and Saturn, to increase the accuracy of their positions.

Michigan.—The building of the University of Michigan Southern Observatory on the summit of Naval Hill in Bloemfontein is nearing completion. The principal instrument is a 27-inch telescope which will be used, chiefly, in the observation of southern double stars on a program of completing the survey of the sky to the South Pole.

The Harvard Station at Arequipa, Peru, has been closed and a new southern station is being established in South Africa near Bloemfontein. In addition to the 24-inch and 10-inch, and three smaller photographic telescopes, which will be transferred

from the Arequipa station, a new reflector, a little over 60 inches in aperture, is to be built for the new station and used for photographic, photometric and spectrographic work.

Texas.—The will of the late W. J. McDonald, bequeathing over a million dollars to establish an astronomical observatory in connection with the University of Texas, has been sustained by the court.

LENSES

Casting a Large Mirror.—A large glass disk, approximately 70 inches in diameter, has been cast, at the Bureau of Standards, by pouring the molten glass into a mold, which is at the same time an electrically-heated annealing furnace. The glass was allowed to cool about 2° C per day as it approached the annealing temperature. It was then annealed at a constant temperature for six weeks, after which slow cooling was again started. The whole process will take about 10 months, and since the disk was cast in May, it will not be cold until next February. It cannot be known until that time whether the experiment is a success. The casting of large specula and lenses is a slow process and by no means uniformly successful.

Wide-angle High-speed Lens.—The beautiful photograph of the constellation of Orion with its intricate and far-flung nebulosities, in the *Astrophysical Journal*, vol. 65, Plate II, was obtained by Frank E. Ross at the Yerkes Observatory with a

new lens, of 3-inch aperture and 21-inch focal length, made according to his specifications.

PERSONAL ITEMS

Professor Ralph H. Curtiss has been made director of the observatory of the University of Michigan.

Medal Awards.—The Gold Medal of the Royal Astronomical Society was awarded to Professor Frank Schlesinger, of Yale, for his work on stellar parallaxes and the determination of star places by photography. He also received the Valz Prize of the French Academy of Sciences.

Dr. Herbert H. Hall, of Oxford, was given the Bruce Gold Medal of the Astronomical Society of the Pacific. In the presentation, the president of the society referred to Dr. Turner's development of methods of measurement and reduction of positions on photographic plates without unnecessary labor; to his important papers on earthquakes; and to his ability as a lecturer and writer, in particular as originator of the "Oxford Notebook" in *The Observatory*.

Dr. George E. Hale, honorary director of the Mt. Wilson Observatory, was awarded the Franklin Medal and Certificate of honorary membership of the Franklin Institute.

OBSERVATIONS AND THEORETICAL RESEARCHES

Comets. — Current information about comets is published monthly, by Prof. Van Biesbroeck, in *Popular Astronomy*. Comet 1925a was observed until March, 1927, over the unusual period of nearly two years. Comets 1926e and 1926g could be observed until March, and 1926f until May. The discoveries during 1927 were as follows: 1927a, discovered by Blathwayt, January 13, at Braamfontein, South Africa, was followed by southern observers. It had faded out by August. Comet 1927b was discovered by Reid at Capetown on January 26, magnitude 8. By March it could no longer be seen.

Comet 1927c was the Pons-Winnecke comet, period six years, rediscovered photographically by Van Biesbroeck on March 3, at the Yerkes Observatory. Later it was also found

on a plate taken by him on Feb. 27, and by Merton of Greenwich on a plate of Feb. 25. At the time of discovery it was estimated to be of the 16th magnitude, but it brightened up rapidly. It was visible to the naked eye all through June except during full moon. At its best, on June 26 and 27, when it was only about $3\frac{1}{2}$ million miles from the earth, it was a hazy object about 1° in diameter, considerably brighter than the Andromeda Nebula, with a nucleus that looked like a star of the 9th magnitude, but with no tail.

Comet 1927d was discovered on March 10 by Stearns at Middletown, Conn. This comet is remarkable for its large perihelion distance of over three and one-half astronomical units. Its decrease in brightness is very gradual and it will probably be observed for many months, but a large telescope is required. Comet 1927e is the so-called Grigg-Skjellerup comet, first found by Grigg in 1901 and having a period of five years. It was found, photographically, by Hargreaves and Merton, at Greenwich, on March 27. By the beginning of June it had brightened sufficiently to be easily seen in a small telescope. At best it was a very diffuse object and it faded out in July.

Comet 1927f was discovered by Gale, at Sydney, on June 7. Enough observations were secured in the southern hemisphere to determine the orbit with fair accuracy, but by the time it came into the northern sky it had become too faint to observe.

Comet Schaumasse (1911 VII), which has a period of eight years, was picked up, photographically, by Van Biesbroeck on October 4. Its designation is 1927g. Encke's comet was rediscovered (as 1927h) by Van Biesbroeck on November 13, very close to the place predicted by Matkiewicz. It was found photographically. It is still very faint—magnitude 16—for it is still three months from perihelion. This makes the thirty-second time that this comet has been "discovered." It was first seen in 1786. It has a period of 3.30 years—the shortest known—and it is called Encke's comet because Encke first recognized (in 1819) that it was

periodic. Its orbit is very small—it only goes out to within about eighty-three million miles of Jupiter—and, for some reason, the orbit is getting smaller. The usual explanation is that the comet meets with some sort of resistance which retards its motion. This diminishing of the size of the orbit has brought with it a shortening of the period of almost two days and a half in a hundred years.

A faint comet (1927i) was discovered by Schwassmann and Wachmann at Bergedorf, Germany, on November 15. The last comet of the year was very disappointing. It was discovered on December 3 by Skjellerup at Melbourne. It was of the third magnitude and getting brighter and moving rapidly northward. According to the first published ephemeris it promised to be a conspicuous object in the evening sky in the northern hemisphere some time before Christmas, but careful searching of the western sky after sunset brought only disappointment. Fortunately the astronomers at the Lowell Observatory thought of looking for it in the daytime. On December 16 they saw it in the forenoon with the naked eye within five degrees of the sun. It was much brighter than Venus but soon began to fade. Observations were secured spectrally and radiometrically for several days. The comet faded rapidly, slowed up in its northerly motion and swung to the west of the sun. By December 21 it was no brighter than at the time of discovery and we had been cheated of a chance to see a brilliant comet in the night sky.

RESEARCH

The Gravitational Constant.—As a result of four years' work at the U. S. Bureau of Standards the value of the gravitational constant has been carried to one more decimal place by Paul R. Heyl. The determination was made with a torsion balance on the principle essentially of that used by Henry Cavendish in the 18th century, but with the aid of all the improvements available in a modern research laboratory. Boys and Braun, about 1895, each found the value

6.66×10^{-8} . Heyl now finds 6.664×10^{-8} . The work is being continued.

The Velocity of Light.—The definitive results announced (*The Astrophysical Journal*, vol. 65, p. 1) by Michelson, for the velocity of light from his measurements in 1926 with revolving mirrors over the twenty-two-mile range between Mt. Wilson and San Antonio Peak verify the preliminary work of 1924 while modifications in the apparatus and careful manipulation have very much reduced the probable error of the results. The Coast and Geodetic Survey cooperated by establishing a new base line in the vicinity and measuring the path traversed by the beam of light with an accuracy which, it is believed, exceeds that of any other line ever determined by triangulation. The actual error of the straight-line distance between the two observing stations is thought to be of the order of one part in a million. Michelson's final value for the velocity of light is $299,796 \pm 4$ kilometers. It is hoped that during the winter season when the rains clear the atmosphere it will be possible to reflect the beam of light from Mt. Wilson to Mount San Jacinto, a distance of eighty-two miles, and back. This has already been tried with some success but the returned light was so enfeebled by smoke that measurements were impracticable.

PLANETS

Mars.—Observation of Mars in light of different colors was continued at the opposition of 1926. Two types of clouds were photographed. One shows up well in blue and violet light, but not in red; the other is best seen by red, and not at all in violet light. Clouds of the second type are interpreted as low-lying aqueous clouds, like the clouds on the Earth; while those of the first type are of unknown composition and are believed to lie high in the Martian atmosphere (*Lick Observatory Bulletin*, 389). The radiometric observations of Mars by Coblenz and Lampland at the Lowell Observatory are generally in accord with those obtained at the last opposition. The temperature of the surface of Mars,

under a noonday sun, rises considerably above the freezing point of water. The temperature at the sunrise limb is lower than at the sunset limb. An observed variation of temperature with phase indicates that the planet's surface is rough. Trumpler's photographs of Mars with red filter and slow lantern slides sensitized with pinacyanol show interesting changes in intensity along the course of the "canals." (*Publ. Astron. Soc. Pac.*, vol. 39, p. 103.)

Jupiter and Venus have also been studied in various colors. The photographs of Jupiter are believed to represent conditions at various levels in the atmosphere. Those taken in ultra-violet light and in infra-red light are hardly recognizable as portrayals of the same object. The photographs (F. E. Ross) of Venus in ultra-violet light show a considerable amount of detail, in the nature of rapidly changing dark belts parallel to the equator and bright areas near the poles. These details are not seen on photographs taken in yellow or red light and are not visible to the eye.

Moons of Jupiter.—A series of photo-electric measures of the four bright satellites of Jupiter show that each varies in brightness in the period of its revolution and comes up rapidly to maximum brightness at the full phase. This is believed to mean that each satellite keeps one face turned toward Jupiter, just as the moon does toward the Earth, and that each has a rough, irregularly spotted surface, again like the moon. It is also found that such measures give a promising method for testing the constancy of the radiation of the sun (*Lick Observatory Bulletin*, no. 385).

THE SUN

The spectrohelioscope has been improved and developed by Hale into an important scientific instrument. With it he has studied the motions of hydrogen flocculi in the vicinity of sun-spots and has found further confirmation that these are vortices in which the direction of gyration is the same as that in terrestrial cyclonic storms.

The first measurements of high pre-

cision in the infra-red solar spectrum, $\lambda 6868\text{--}\lambda 8980$, have been obtained by Babcock using an interferometer and the new plate-sensitizing material neocyanin. The plates "require a brief treatment with ammonia to make them ready for use. They keep indefinitely before this treatment and for at least two months afterward." The plates are free from fog and brilliant in contrast (*The Astrophysical Journal*, vol. 65, p. 140). The plates were prepared at the Kodak Research Laboratories. This work of Babcock's forms an important extension to Rowland's Table of Solar Spectrum Wave-Lengths, which is being revised at the Mt. Wilson Observatory. In this investigation St. John finds strong evidence of the displacement of lines as predicted from the generalized theory of relativity. The differences found at various levels in the solar atmosphere are accounted for on the assumption of descending currents at high levels and ascending currents at low levels.

CLOUDS AND NEBULAE

It is twenty-two years since Hartman discovered "stationary" calcium lines in the spectrum of δ Orionis. J. S. Plaskett has shown that lines of both calcium and sodium that behave differently from the rest of the stellar lines, in Doppler shift, intensity, width, and general appearance, are characteristic of nearly all stars of early type spectra. Two explanations of these "detached lines" have been given: one, that these particular stars are enveloped in widely distributed tenuous clouds of matter; the other, that the material is present all along the path between us and the star.

Otto Struve has examined the spectra of 321 stars. He finds an increase of the K (calcium) line for the faint stars. This is found to extend to the 7th magnitude, beyond which there may be evidence of a decrease in intensity. This is interpreted as an effect of distance. Apparently the region around the sun out to a distance of 150 to 200 parsecs is unfavorable to the production of the lines.

The greatest intensity occurs for stars at distances of 500 to 600 parsecs.

Regional effects are the most important—the mean intensity in a region in Cepheus is found to be over twice as great as that in a region in Orion. B3 stars have weaker detached lines than the earlier types and the lines do not occur in types later than B3. The lines are slightly stronger in a belt of 20° along the Milky Way. The components of visual double stars even when they differ markedly in brightness and type have identical intensities—i.e., it seems that the absorption takes place at a distance at least so great that the double acts as a single star. Absorption takes place only in the vicinity of the hottest stars. It may be that there is a greater concentration of calcium clouds near the boundaries of the local cluster.

The calcium cloud apparently begins at a distance of about 250 parsecs. Up to a certain distance, then, the farther away a star is the greater would be the chance of its being involved in the clouds—thus explaining the distance effect. Beyond that they may thin out again (Dec. *Astrophysical Journal*, vol. 65, p. 163).

This brings us to a second study by E. S. King, in the *Harvard Astrophysical Observatory Circular* 299. Previous studies have shown increasing redness with increasing faintness of stars, hence with increasing distance. Interpreted as due to the presence in space of absorbing matter, the observed rate of increase of redness would require that the very distant stars be intensely red. Shapley's studies of globular clusters, however, revealed a large proportion of negative color indices characteristic of blue stars at these great distances of 20,000 light years or more. The discrepancy has been a puzzle.

King rediscusses the observational material and confirms the previous conclusions that the more distant stars are redder. He also finds that with increasing absolute brightness and with diminishing proper motion the stars are redder and that on the average stars in the Milky Way are redder than those near the galactic

poles. King now advances the hypothesis that a local cloud of absorbing matter envelops our cluster of stars. Stars within the cloud show increasing redness with distance. Those outside are reddened only by a uniform amount for all distances. It seems possible that King's absorbing medium and the local cloud of calcium are identical.

ISLAND UNIVERSES

The scheme of classification of the nebulae proposed by Hubble in 1923, appears to be a sound one. The nebulae are divided into two great groups, the galactic and the extra-galactic. The former group contains the planetary and the diffuse nebulae which are evidently clouds of dust and gas that are excited to luminosity by the radiation of bright stars involved in them. They are strongly concentrated toward the Milky Way and are evidently members of the galactic system. The extra-galactic nebulae, on the other hand, which include the elliptical, the spiral and the relatively few irregular nebulae, show a marked avoidance of the Milky Way. Reference has been made in previous years (*THE AMERICAN YEAR BOOK*, 1925, p. 791) to the methods employed in finding the distance and dimensions of the great spiral Andromeda Nebula. Definite evidence by such methods is limited to six objects. But there are many thousands of them and Hubble has studied (*Astrophysical Journal*, vol. 64, p. 321) their general characteristics, hoping to learn of their nature and of the distance into space one may look with the 100-inch telescope.

Aside from the irregular nebulae, which are few in number, the characteristic feature of extra-galactic nebulae is rotational symmetry about non-stellar nuclei. The various forms fall into a progressive sequence ranging from globular masses of unresolved nebulosity to widely open spirals whose arms are swarming with stars. The sequence comprises two sections, elliptical nebulae and spirals, which merge into each other.

The elliptical nebulae show no signs of resolution and fade smoothly from bright nuclei to indefinite

edges. Their forms range from circular disks to figures of considerable ellipticity. Their real figures probably range from globular to lenticular. The spirals are evidently flatter. They fall naturally into a sequence, beginning with forms with a large nuclear region around which are closely coiled arms of unresolved nebulae, passing through objects in which the arms appear to build up at the expense of the nuclear regions and unwind as they grow, and ending with forms with wide open arms, broken up into numerous condensations, and with inconspicuous nuclei. Some of them give evidence of the presence of obscuring matter such as we are familiar with in the Milky Way, and there are sometimes small patches of gaseous nebulae within the larger masses. Some are peculiar in that the arms appear to start from the ends of a bar which extends across the nucleus.

Hubble concludes from his study of 400 of the brighter nebulae that there is a distinct correlation between total brightness and diameter, which suggests that for any one form the nebulae are all of the same order of absolute luminosity. This conclusion opens the way to using the apparent brightness as a measure of distance. This hypothesis is supported by similar results for the nuclear magnitudes and the magnitudes of the brightest stars involved, and by the small range in luminosities among nebulae whose distances are already known. The mean absolute visual magnitude of the nebulae whose distances are known, is -15.2 .

This value is used for deriving the distances and dimensions of the unknown nebulae. Spirals at the last stage in the observed sequence are found to have a diameter of 3,000 parsecs or about 100,000 light years. The term "island universes" appears, therefore, to be well chosen. As Shapley says, however, "if we call them islands, the Galaxy is a continent."

The masses appear to be of the order of 2.6×10^8 times the sun's mass. Further, they seem to be pretty uniformly distributed in space—of the order of one nebula per 10^{17} cubic

parsecs. It is estimated that there are 300,000 of these nebulae near enough to be detected by an hour's exposure with the 60-inch reflector. The 100-inch reflector, with long exposures under good conditions, will probably reach nebulae of the total visual magnitude 18.0, and this is estimated to represent a distance of the order of 1.4×10^8 light years, within which it is expected that about two million nebulae should be found. This represents the present boundaries of the observable region of space. Using the space density found above, Hubble finds this distance to be about $1/600$ the radius of curvature of the finite universe of general relativity.

SPACE DISTRIBUTION OF STARS

This has been studied in the Cygnus region of the Milky Way by classifying the stars as to spectral type and deriving their distances from their known luminosities. It is found that the numbers of stars begin to decrease at a distance of about 200 to 600 parsecs; and that the predominance of late type dwarfs over giants of the same spectral type appears to be greater than usually adopted for the nearer regions of space. By using the curves found for this small part of the sky as of general application it is found that the observed number of faint stars in the sky could be accounted for by taking the radius of the sidereal system as not greater than 10,000 parsecs (*Lick Observatory Bulletin*, no. 390).

COMPOSITION OF THE NEBULAE

For more than sixty years it has been known that a large number of the nebulae are masses of luminous gas; that is, that it is a rarefied gas which emits the light, although solid matter may be present and invisible. The various gaseous nebulae show very similar spectra, in which the lines of hydrogen are conspicuous, those of helium fairly prominent, and those of ionized oxygen, nitrogen and carbon are present, though faint. The strongest nebular lines, however, have never yet been produced in a terrestrial laboratory. It was formerly supposed that they were produced by some unknown element to

which, in fact, a name "nebulium" was given. Since all the known elements which appear in the nebulae are either permanent gases or constituents of such gases, it was assumed that nebulium was also gaseous under ordinary conditions.

Atoms.—Recent advances in atomic physics have made it certain that there are no remaining undiscovered elements, except a few of high atomic weight, which would be gaseous. It follows that the "nebulium" lines must be given by some known element, shining under some unusual condition, which has not been reproduced in the laboratory. This condition was recognized as being in all probability the extremely low density of the nebular gas. There may exist in the atoms a light-giving process, of such a character that it demands a relatively long "latent time," during which an atom must remain undisturbed by collisions with others in order that it may emit the radiation in question. Under ordinary pressures, or even in "vacuum" tubes, collisions between atoms occur thousands or millions of times per second. In the very rarefied nebulae they may not happen once a day.

RELATION OF ATOMS

A very satisfactory solution of this problem has recently been obtained by Dr. I. S. Bowen of the California Institute of Technology, based upon the preceding considerations, and upon the investigations in the spectra of ionized oxygen and nitrogen which he has conducted along with Dr. Millikan.

An atom emits light when it changes from one to another of a certain set of "energy states" in which it can exist. An "excited" atom with a high energy content can usually change to one or more less excited states by emission of light, and, if so, will do so in an average time of about a hundred-millionth of a second. By a succession of such processes it may drop down to the normal state of lowest energy, or it may reach a "metastable" state, in which it is still charged with energy. It was formerly supposed that in such a

state it could unload its energy only by collision with another atom. But it appears that in this case also it can unload by radiating light, but that the probability of such a change is relatively very small, so that the atom may have to wait for a considerable fraction of a second before it can radiate. Under laboratory conditions, collisions with other atoms will prevent the radiation, but in the nebulae there is time enough for it to happen.

NEBULAR LINES

When the spectrum of a given element has been thoroughly analyzed, and these metastable states accurately determined, it is possible to calculate exactly where the spectral lines would be which corresponded to transitions of the sort just described. Bowen thus finds that the strongest nebular lines in the green $\lambda 5007$ - $\lambda 4959$ and one in the violet at $\lambda 4363$, are produced by transitions between metastable states in doubly ionized oxygen,—that is, in an oxygen atom which has lost two electrons. Strong lines in the ultra-violet at $\lambda 3729$, 3726 , and in the far red at $\lambda 7325$, are produced by similar transitions in singly ionized oxygen, and another pair in the red at $\lambda 6584$, 6548 , arise similarly from ionized nitrogen. The agreement of the observed and calculated positions is in all cases satisfactory. Only two of the stronger nebular lines remain unidentified.

The nebular lines have thus been shown to arise from the very most familiar of terrestrial substances, and nebulium has literally vanished into thin air.

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DIVISION XIX

ENGINEERING AND CONSTRUCTION

STRUCTURAL ENGINEERING

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BRIDGES

New Construction.—When it was completed a little more than a year ago, the Camden-Philadelphia bridge with a span of 1,750 ft. was the largest suspension bridge in the world. The Fort Washington-Fort Lee suspension bridge with a span of 3,500 ft., twice the span of the Camden-Philadelphia bridge, has recently been placed under construction. These great bridges, together with the proposed arch bridge with a span of 1,650 ft. over the Kill von Kill, to be built by the Port of New York Authority, the arch bridge with a span of 1,600 ft. now being built by the City of Sydney, Australia, the proposed Oakland bridge over San Francisco bay, and many other projects proposed or under way, show that we are entering on a new era of great bridges.

Toll Bridges.—Practically all the large bridges for vehicular traffic that have been completed within the last few years or that are now under construction or are projected are toll bridges. There has been some question about the successful financing of toll bridges, and the receipts from tolls on any bridge are therefore of great interest. The Camden-Philadelphia bridge, opened on July 1, 1926, for the first twelve months yielded a gross income of something over \$2,000,000, representing a gross income of 6 per cent of the cost, and a net income—after deducting operation and maintenance—of about 5 per cent.

Fort Washington-Fort Lee Bridge.

—The plans have been completed and construction has been begun on the largest bridge in the world, which is to span the Hudson River from Fort Washington, New York, to Fort Lee, New Jersey. This bridge is of the suspension type with a single span of 3,500 feet between main towers; it will be nearly double the 1,800 ft. Quebec cantilever and exactly double the 1,750 ft. Camden-Philadelphia suspension span. This bridge is being constructed by the Port of New York Authority, under direction of the legislatures of the states of New York and New Jersey. The work is financed by an initial appropriation from the two states and an issue of Port Authority bonds. The total cost when completed is to be \$75,000,000, but only \$55,000,000 to \$60,000,000 will be needed in order to open the bridge for traffic.

When completed the bridge will have a traffic capacity of eight highway lanes of traffic on an upper deck, and from four to six rapid transit tracks or lanes on a lower deck. It is planned to build the towers and cables to full capacity initially, but to provide in the beginning only the highway lanes of traffic on the upper deck. The bridge is symmetrical, with 650 ft. shore spans on each end. The bridge has a total length of 4,800 ft. and a vertical clearance above high tide of 200 ft. The cable has a sag ratio of 1 to 10.8, which makes the span slightly less flat than that of the Brooklyn bridge, and

slightly flatter than those of the Williamsburg, Manhattan, and Camden-Philadelphia bridges.

Alternate plans were prepared for parallel wire cables and for high strength forged eyebar cables. The eyebar cables were $2\frac{1}{2}$ times as heavy as the wire cables. For either type of suspension, the sizes are much larger than in any former bridge. With the eyebar cables, each side of the bridge will be carried by eight groups of twelve eyebars averaging 16 in. by 2 in., arranged in four tiers, comprising 96 eyebars with a cross area of 3,456 sq. in. If wire cables are adopted there will be four cables 36 in. in diameter, two cables on each side of the bridge. The cables in both plans are to be spaced 106 ft. apart. Rope suspenders will be used with both types of cable and will be spaced 60 ft. apart.

The towers are to be made of structural steel framework with concrete and masonry encasement to serve as a permanent weather protection and to give architectural effect. In a bridge of this great span, the stiffening truss assumes a minor position. With the great weight of the span and with distributed highway loads, no stiffening truss was considered necessary in the initial construction for vehicular traffic on the upper deck. The upper chord of the stiffening truss only will be provided, the web members and bottom chord will be supplied when the lower deck is added. The stiffening truss is very shallow, 26 ft. 7 in.; it is discontinuous at the towers, and has a uniform cross section for the entire span.

Silicon steel is used in the columns of the towers and for the main material in the floor systems. Carbon steel is used in the bracing of the towers and the floor system. The cable eyebars (if used) will be heat-treated eyebars with a minimum ultimate strength of 105,000 lb. per sq. in., and a minimum yield point of 75,000 lb. per sq. in., and are proportioned for a working stress, including secondary stress, of 50,000 lb. per sq. in. The wire cables (if used) will consist of No. 6 galvanized wires having a minimum ultimate strength of 220,000 lb. per sq. in., a minimum yield point of

150,000 lb. per sq. in., and a working stress, excluding secondary stress, of 82,000 lb. per sq. in.

The final dead loads for the eyebar cable design are 50,000 lb. per lin. ft. for the center span, and 56,000 lb. per lin. ft. for the side spans. For the wire cable design, the dead loads are 39,000 lb. per lin. ft. for the center span, and 40,700 lb. for the side spans. The live loads were taken to correspond with heaviest modern traffic. In the design of the stringers with a span of 60 ft., the live load was 31,000 lb. per lin. ft. of bridge (both decks, ultimate condition). In the design of floorbeams with two spans loaded, the live load was 26,000 lb. per lin. ft. of bridge. In the design of the suspenders with 5 panels loaded, the live load was 18,000 lb. per lin. ft. of bridge. For the full load on the span for the design of cables and anchorage, the live load was 8,000 lb. per lin. ft. of bridge.

The bids received for the superstructure show that the wire cable bridge is cheaper than the eyebar cable bridge by about 7 per cent. By combining bids, the lowest total bid for the wire cable bridge was 10 per cent less than the lowest eyebar cable bid. Contracts have been let for the piers and the work is progressing satisfactorily. The plans call for the completion of the initial stage of the bridge by December 1, 1930.

Carquinez Bridge.—The cantilever bridge across Carquinez Strait in California is the second largest cantilever bridge in the United States and the fourth largest in the world. The Carquinez bridge has two main spans of 1,100 ft., two shore or anchor spans of 500 ft. and a central tower span of 150 ft., making a total length of 3,350 ft. The Quebec bridge has a main span of 1,800 ft., the Forth bridge has two main spans of 1,700 ft., and the Queensborough bridge has two spans of 1,182 ft. and 984 ft. respectively. The Carquinez bridge is notable for its deep pier foundations, 132 ft. below water level, and also on account of the consideration given to possible earthquake forces in designing the bridge. The trusses are 42 ft. center to center providing 3 lanes of traffic, 30 ft., and a sidewalk

on each side. The towers are 150 ft. high, and the suspended spans have a length of 433 ft.

Silicon steel with an ultimate tensile strength of 80,000 to 95,000 lb. per sq. in. and a minimum yield point of 45,000 lb. per sq. in. was used for main material in the towers and for compression members and built tension members in the trusses. Heat treated carbon steel eyebars were used for the main tension members. The bridge contains 13,294 tons of structural steel.

Special provision against earthquake shock was made by providing hydraulic buffers at the expansion joints between the suspended spans and the shore cantilever span; also at the tower between the main structure and the viaduct. Six hydraulic buffers are provided, four at the bottom chords of the trusses and two between the top chord and the approach span. The assumed horizontal earthquake of 320,000 lb. corresponds to an assumed maximum acceleration 15 in. per sec.

The suspended spans were erected complete on the dock, were transferred by means of eight 500-ton jacks from the falsework to two 40x130 ft. steel barges. The steel barges were towed into position. At high tide the 500-ton jacks transferred the load of the span to steel raising cables attached to the four corners of the span. The span was raised into place by counterweights made by filling suspended boxes with sand. The weight of the suspended span, omitting stringers and including rigging, was 620 tons. The counterweights weighed 640 tons.

BUILDINGS

World's Largest Office Building.—The Graybar Building, recently completed at Forty-third Street and Lexington Avenue, New York City, has 1,350,000 sq. ft. of floor surface above ground and on this basis is the largest office building in the world. The building occupies a ground space of 248 ft. 8½ in. by 275 ft., is 30 stories high, and rises 390 ft. above the street level. In the basement of the building are located the New York Central R. R. tracks and facilities. The office floors are designed for a live

load of 60 lb. and the roof for 40 lb. per sq. ft. The ground and mezzanine and second floors are designed for a live load of 120 lb. per sq. ft. Below the ground floor the live loads vary from 120 lb. for the suburban concourse to 350 lb. per sq. ft. for the workshop floors.

While the wind stresses were not an important factor due to the large width of the building, particular attention was given to the elimination of vibration caused by railroad trains in the basement. The steel framework supporting the railroad tracks and the machinery was entirely independent of the steel framework for the building. In addition, vibration insulation consisting of 2 layers of ⅜-in. asbestos, 2 layers of ⅛-in. sheet lead, and 1 layer of No. 20 galvanized iron was provided under all building supports.

The building has a self-supporting steel framework with short span concrete slab floors carried on steel floor joist. A 4-in. cinder concrete floor slab is used with 3 in. of fill and 1 in. of finish. The total weight of structural steel in the building is 22,500 tons. Above the ground floor the building has a volume of 16,177,000 cu. ft. and the weight of the steel is 17,000 tons or 2.1 lb. per cu. ft. of building.

Design of High Buildings.—An interesting study has been made of the stresses in the structural frame of the American Insurance Union Building at Columbus, Ohio. This building has 20 stories in the main section with a 47-story tower 555½ ft. high. The stresses in the steel frame of a high building when calculated by any method are approximate, due to (1) the uncertainty as to the wind pressure in amount, point of application, and line of action; (2) the uncertainty as to the conditions and fixity of the joints, and (3) the unequal settlement of the foundation. To calculate the true stresses requires in addition that the areas and cross-sections of the framework members shall be known. A comparison of the stresses, as calculated by taking the rigidities of the members into account with the approximate method in which the stresses are calculated

by assuming points of contra-flexure in the columns midway between the floor girders and in the floor girders midway between the columns, with the loads divided between the bays in proportion to the length of floor girders, shows that the latter method gives results that are sufficiently accurate for design.

A study of the effect of the tornadoes in Cuba, at Miami, Florida, at St. Louis, Missouri, and in southern Illinois, shows that where the framework for reinforced concrete or steel structures is designed to carry a wind load of 30 lb. per sq. ft., the structure may be reasonably expected to pass through a tornado without serious damage. While the study of earthquakes has not progressed far enough to reach final conclusions, it can be stated tentatively that where the framework of concrete and steel buildings is designed for a wind load of 30 lb. per sq. ft. the structural damage due to earthquakes will not be very serious. The building code of Santa Barbara, California, provides that the framework of the buildings shall be designed to carry a horizontal load applied at the center of gravity of the supported load and equal to 10 per cent of the supported load, where the safe bearing load on the foundation is four tons per sq ft., and for a greater horizontal load for smaller bearing pressures. This specification is very severe and will greatly restrict the heights of buildings.

OBSOLESCENCE OF OFFICE BUILDINGS

The Women's Temple, a 12-story steel-frame Chicago office building erected in 1890-1891, was wrecked in 1926 to permit the erection of a modern office building. A study was made to determine the extent to which it had been affected by obsolescence. The building was of the wall bearing type with interior steel framing. The walls were solid masonry 42 in. thick. Floors were of tile-arch construction. The old building cost 39 cents per cubic foot. Outside the roof construction the steel frame had suffered no damage. The majority of the steel columns and all the steel beams and

girders were in perfect condition. The cinder floor produced no corrosion. The roof was of the gable type covered with tiles laid in mortar, and had leaked badly, causing considerable deterioration. The mortar in the brick walls was found to be brittle and the bond of the brick work was defective; the bricks, however, were in good condition. The spread foundations were obsolete because of design and because they permitted settlement that was destructive. The old style column spacing and the thick walls reduced the rentable space by at least 1,000 sq. ft. on each of eight floors. The floors were 21 in. thick in place of a possible thickness of 13 in. in a modern office building. Modern design would also increase the rentable area in the basement and in the lower stories. A modern design of the same exterior dimensions on the basis of this study would have given an added yearly income of \$53,833.

The cost of wrecking the building was \$95,000 in addition to the salvage. Depreciation should therefore be from full value to some negative value in place of from full value to no-value at the end of a specified period of time. The annual depreciation of the building for a period of 34 years from full value to minus \$95,000 was 3.2 per cent. From this study it would appear that the period of fifty years commonly assumed as the life of a steel office building is too long a time to assume, and that the percentage allowed for depreciation has commonly been underestimated. To the owner this deficit is in many instances more than offset in an increase in the value of the land.

STRUCTURAL WELDING

Welding Steel Structures.—A continued interest has been shown in structural welding. A critical study of the electrically welded shop building constructed for the Westinghouse Electric & Manufacturing Company, at Sharon, Pa., by the American Bridge Company, showed that there was a saving in the weight of structural steel over a similar building with riveted joints; but that the total

cost of the building with welded joints was considerably greater than for the same building with riveted joints. That is, in the present state of the art, welding of steel structures is more expensive than riveting. Under these conditions, riveting will be found preferable unless welding offers some inherent advantages that will be worth the extra cost. Examples where welding has advantages over riveting are in plate work with thin plates where the joints must be tight, where maximum rigidity is desired, or where it is desired to make an attachment to one side of a structural member without having access to the other side.

Metallurgical Problems.—Many metallurgical problems remain to be solved in connection with the welding of structural members. One of these problems is to get a satisfactory weld with plates of widely varying chemical characteristics. The material in the weld is practically badly heat-treated cast steel, and there has been a question as to the reliability and strength of such a weld under repeated stresses. Results of tests of fatigue strengths made by the Army Air Service at McCook Field at Dayton, Ohio, and reported by R. R. Moore to the Welding Society in April of this year indicate that the fatigue strength of welds is much less than the fatigue strength of the steel joined by the weld.

Static tensile tests of welded joints gave values varying from 50,000 to 60,000 lb. per sq. in., but the endurance limit (the maximum tensile stress that can be applied an indefinite number of times without causing failure) was in one or two instances as low as 8,000 to 9,000 lb. per sq. in., with a maximum endurance limit of 22,000 lb. per sq. in. The endurance ratio (ratio of endurance limit to ultimate tensile strength) varied from 0.13 to 0.35; while a specimen of cast steel showed an endurance limit of 0.41. In general, the three methods of testing—gas welding, arc welding, and atomic-hydrogen welding—gave comparable results. While welding will have a place in the structural steel industry, many problems still remain to be solved by research

and experience before welding can be substituted for riveting in structures of magnitude and importance.

TUNNELS

The Holland Tunnel.—The vehicular tunnel under the Hudson River, called the Holland Tunnel in honor of the first chief engineer, Clifford M. Holland, was formally opened for traffic on November 12, 1927. This tunnel, the largest vehicular tunnel in the world, was built jointly by the states of New York and New Jersey, acting through the New York Bridge & Tunnel Commission and the New Jersey Interstate Bridge & Tunnel Commission. The tunnel consists of two tubes built of cast iron segments bolted together forming a ring 29 ft. 6 in. outside diameter. This ring is lined with concrete, forming the roadway supports, sidewalk and sides. The north tube is to accommodate westbound traffic entering the New York Entrance Plaza between Hudson and Varick and Broome and Watts streets in New York; while the south tube serves eastbound traffic entering at Twelfth and Provost streets, Jersey City.

The total length of the tunnel is 9,250 ft.; distance between portals, 8,463 ft.; distance between river shafts, 3,374 ft.; and length of under river-portion, 5,480 ft. The roadway in each tube has a clear width of 20 ft. and a clear head room of 13 ft. and 6 in. The maximum up-grade of the tunnel is 3.8 per cent and maximum down-grade is 4.06 per cent. The estimated hourly capacity of both tubes is 3,800 vehicles. The estimated daily traffic is 46,000 vehicles, and yearly traffic is 15,000,000 vehicles. The maximum depth of the top of the tunnel below mean high water is 72 ft. The construction of the tunnel required the excavation of 500,000 cu. yd. of material. The tunnel lining required 115,000 tons of cast iron while there were 113,000 cu. yd. of tunnel concrete. The total cost of the tunnel was \$48,400,000. Half of the cost of construction and maintenance is borne by each state. The work was organized and Mr. Clifford M. Holland was appointed Chief Engineer on July 1, 1919.

The construction of the tunnel began on June 27, 1921, and proceeded almost continuously until May 8, 1926, when the use of compressed air was discontinued. The tunnel was opened for traffic November 12, 1927. The tunnels were driven by means of shields in which the water was held out by means of compressed air. While the greater part of under-river tubes were driven through silt, a portion nearly 1,000 ft. long near the New York pier head was driven through ledge rock. The maximum pressure required was for the New Jersey river shafts, and was 47.5 lb. per sq. in. above atmospheric pressure. During the five-year period, 756,560 decompressions took place with only 528 cases of "bends" or caisson disease, and with no fatality that could be attributed to caisson disease. This exceptional record is due to the care and the full times used for decompressions. The air in the tunnel can be completely changed in less than one and one-half minutes or 42 times per hour. The total amount of fresh air to be supplied to the tunnel is 3,761,000 cu. ft. per minute. The carbon monoxide is limited to 4 parts in 10,000 parts of air. The space below the roadway conducts fresh air from the blower fans in the nearest ventilation building, and a space above the ceiling carries the vitiated air away to the same building where it is exhausted by exhaust fans. There are 84 blowers and fans provided, of which one-third are held as a reserve. The fresh air in the tunnel is led by side ports from below the roadway to an "expansion chamber" which extends on either side a little above the curb. A continuous slit in the expansion chamber allows the air to enter the tunnel, whence it passes through exhaust ports in the ceiling, so that there is no movement of the air lengthwise in the tunnel roadway portion. While 6,000 horsepower has been installed, only 4,000 horsepower will be required to operate the fans at maximum capacity. The method of ventilating the Holland Tunnel and the design of the ventilating equipment were based on original tests and investigations. These in-

vestigations were made in cooperation with the United States Bureau of Mines, and the University of Illinois through its Engineering Experiment Station. The investigations covered four main subdivisions: (1) nature and quantity of gases emitted by motor vehicles, (2) the physiological effects of gases, (3) tests as to method of admitting and exhausting the air, and (4) the determination of the friction of the air in the ducts. Physiological tests were made at Yale University and were confirmed by the U. S. Bureau of Mines in the "experimental mine" near Pittsburgh.

The electric current for power and lighting is obtained from both sides of the Hudson River. On either side current is available from three independent cables, any one of which may be fed from either of two generating sources.

The Moffat Tunnel.—The Moffat tunnel passes under James Peak on the Denver and Salt Lake Railroad west of Denver, Colorado. The tunnel is 6.11 miles long; it replaces 27.6 miles of railroad line with a maximum grade of 4 per cent (200 feet to the mile), with 11,000 degrees of curvature. The tunnel makes it possible to operate trains economically and safely during the entire year. When the Dotsero cut-off, 41 miles long, is built west of the tunnel the rail distance between Denver and Salt Lake City, via the Denver and Salt Lake and Denver and Rio Grande Western Railways will be shortened 173 miles.

The Moffat tunnel consists of a railroad tunnel 16 ft. wide by 24 ft. high and 32,253 ft. or 6.11 miles long, and a water tunnel 9 ft. wide by 8 ft. high and 32,380 ft. long. The elevation of the east portal is 9,198 ft., of the west portal is 9,085 ft., and of the apex is 9,242 ft. The grade from the east portal to the apex is 0.3 per cent, while the grade from the west portal to apex is 0.8 per cent. The grade of the water tunnel is 7.5 feet above the grade of the railroad tunnel. The water tunnel will be used for conveying water from the western slope to the eastern slope to be used for a domes-

tic water supply for Denver and for irrigation purposes.

CONCRETE STRUCTURES

Researches.—During the year research investigations have been continued on the character, composition, and chemical and physical properties of Portland cement. Considerable progress has been made in developing alumina cements and other cements that will give early strength.

Field tests have been completed on the Stevenson Creek Dam in California. This experimental dam is a circular dam 60 ft. high and has a length of 140 ft. on the crest. Its upstream radius is 100 ft., and its thickness is 7.5 ft. at the base and 2 ft. at the crest. Forty days after the dam was completed the first test was made with water 20 ft. deep. Tests were later made with water 30, 40, 50, and 60 ft. deep. After the tests were completed, a severe storm caused a flood which filled the reservoir and water flowed over the crest to a depth of 3 ft.

In the tests the deflections were measured on seven vertical lines at points 5 ft. apart vertically. Under full water head the dam deflected a maximum of 0.378 in. at a point 30 ft. below the crest; at the crest the dam deflected downstream at the center and upstream between the quarter points and the ends. Under a head of 50 ft. a vertical crack appeared at the center line of the dam and extended 11 ft. down from the top. Although the bedrock at the dam site is solid granite a slight spreading of the walls of the canon was observed. The results of the tests are now being studied and are being checked by theoretical analysis. It is planned to check the results of these tests by tests on a series of model arch dams and by an independent study of a celluloid model.

The Swift Island bridge over the Yadkin River, near Albemarle, N. C., is being tested by the North Carolina State Highway Commission in co-operation with the U. S. Bureau of Public Roads. The bridge consists of three large arch spans and several smaller arch spans, and will be submerged by the construction of a

power dam. The arch span to be tested is the center span of the three largest arch spans in the bridge, and has a total clear span of 146 ft. 3 in. The loads will be applied by means of a water tank which, when filled with water, will weigh 330,000 lb. A second tank will be used to increase the load. The stresses obtained in testing this bridge will be compared with tests of a celluloid model of the same span at Ohio State University. After completing the tests the bridge will be destroyed by the U. S. War Department.

Tests of reinforced concrete arch bridges are being carried on at the University of Illinois under the direction of the Committee on Concrete and Reinforced Concrete Arches of the American Society of Civil Engineers.

Tall Reinforced Concrete Chimney.—The reinforced concrete chimney recently built by the Wedge Roaster Plant of the Consolidated Mining & Smelting Co. of Canada, Ltd., at Tadnoc (Trail), British Columbia, is the tallest of its kind on the American continent. The chimney is 400 ft. high above the foundation slab and has a diameter of 20 ft. inside the lining at the top. The shell of the stack is 6 in. thick at the top and 2 ft. 6 in. thick at the base. The foundation is octagonal with an inscribed diameter of 66 ft., a thickness of 9 ft., and contains 900 cu. yd. of concrete. The chimney was designed to resist a wind load produced by a wind blowing 100 miles per hour. The chimney is lined with an acid-resisting lining of vitreous brick 4 in. thick for the entire height.

Wacker Drive.—The Wacker Drive in Chicago, which has recently been completed, forms the fourth side of an inner quadrangle, the other sides of which are formed by Michigan Avenue, Roosevelt Road, and Canal Street. The principal structural feature of Wacker Drive is a reinforced concrete flat slab viaduct 114 ft. wide and three-fourths mile long. The roadway under the drive is 135 ft. wide. The total cost of this improvement was more than \$11,500,000. The construction of Wacker Drive is an excellent example of an

attempt to solve the city traffic problem by double decking a street.

Concrete Dams.—The U. S. Reclamation Service has recently constructed or has under construction several large concrete dams. The American Falls Dam, built at American Falls, Idaho, has a length of 5,400 ft., of which 3,132 ft. are built of concrete with a maximum

height of 85 ft. The dam is of the counterfort retaining wall type with gravity type abutment sections. The Gibson Dam on the North Fork of the Sun River is a large concrete dam of the gravity arch type. When completed the dam will have a length on the crest of 900 ft. and a maximum height of 180 ft. This is also a work of the U. S. Reclamation Service.

MECHANICAL ENGINEERING

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SIGNIFICANT DEVELOPMENTS

The main developments in mechanical engineering in the past year were along three lines. In the field of power generation further progress was made in the size of units and it would appear that, mechanically, there is no limit to the turbine sizes that can be built as long as somebody has the business to handle the output of the central stations. The second development is in the field of fuel utilization. Just how far coal distillation or modification will go nobody knows as yet, but it is fairly certain that something big in this direction is coming, and coming quickly. The third important line of development may be referred to as cross-fertilization of mechanical arts, one art developing by borrowing the devices of another one. Thus, machine tools are being greatly improved by the introduction of alloy steels and hydraulic drives; chemical control of fuels permits better output from internal combustion engines, etc. This is not a new feature, but is becoming every year of growing importance and seems to have attained a recognized position in 1927.

RECIPROCATING STEAM ENGINE

Relation to Steam Turbine.—In Germany there appears to be a new view created on the position of the

reciprocating steam engine. Lack of capital and acute competition has forced a revision of many former conceptions, among them being the relation between the steam turbine and steam engine. The general feeling is that, where there is a demand for steam or hot water in addition to power, a steam engine in outputs below 1,000 h.p. and sometimes as high as 2,000 h.p. can be run, with proper arrangements, more economically than a steam turbine. This means primarily an extraction type of steam engine, and several novel arrangements have been developed for governing the engine output and delivery of extraction steam in such a manner as to permit the two functions to operate at the greatest efficiency and convenience.

A conclusion has been reached to the effect that the steam turbine is least efficient in the high pressure range where the blades are short and the clearance losses high. It is most efficient in the low pressure range where the opposite conditions prevail. On the other hand, the reciprocating engine is least efficient in the low pressure range where, on account of the enormous volume of steam, the cylinder cannot be emptied fast enough. On the other hand, the steam engine works best in the high pressure range. This led Professor Bauer and Dr. Wach to develop the so-called

Bauer-Wach system for marine propulsions. This system is characterized by having the exhaust steam of a high pressure reciprocating engine used in a small, high speed turbine, which, by a double reduction gear, works upon the same line of shafting as is driven by the reciprocating engine. As maneuvering would be difficult on account of high speed of the turbine in direct drive, a hydraulic coupling is used to enable the turbine to be engaged or disengaged while the reciprocating engine is working. One of the advantages claimed for this system is that high vacuum, with its consequent heat economy, can be used in installations of low power.

HIGH PRESSURE STEAM

Generation and Utilization.—Work has been continued in the direction of further development of high pressure steam generation and utilization. Reference has been made before to the Weymouth Station of the Boston Edison Company where steam pressure at 1,200 pounds per square inch has been used. This plant has been in operation now for quite some time and proved to be sufficiently safe and reliable. Whether it shows ultimate economies in the way of costs of steam generation cannot yet be stated because of lack of complete data. It would appear, however, that the high initial cost of installation will seriously militate against universal adoption of these higher steam pressures except under certain specifically favorable conditions where the employment of such high pressures permits of unusual economies. It should be clearly understood, however, that the whole problem is still in a state of flux, and further experience is necessary before any definite conclusion can be made.

Foreign Experiments.—In the meantime, work is being done in this direction both in the United States and in Europe. In Europe, particularly, two types, the Schmidt in Germany and Loeffler in Austria, have been successfully applied. The Sulzer Works of Winterthur, Switzerland, have built an experimental boiler to be operated at 110 atmospheres

(1,565 pounds ga. per sq. in.), with a total steam temperature of 707 degrees F. The boiler consists of two separate units, one of which works at full pressure and the other at approximately 200 pounds per square inch. The low pressure part serves as a feed water heater to the high pressure part. The purpose of this arrangement is to determine whether it will be possible to convert existing plants to the high pressure program without scrapping the existing equipment.

Boiler Tests.—Reference has been made before to what might be called an ultimate pressure boiler designed by the British engineer, Benson. In this boiler, water is supplied at a pressure of approximately 3,200 pounds per square inch and a temperature is used at which water passes into steam without changing in volume. Quite remarkable economies were claimed for this boiler on the basis of tests carried out with a very small unit at Rugby, England. Recently the great Siemens-Schuckert Works, in Germany, became interested in this invention and built a boiler with an output of about 10,000 pounds of steam per hour. Another boiler of double that capacity is now under construction. Tests of this boiler have given what appear to be very encouraging results. Among other things, it was found that, contrary to expectation, the boiler is of an unusually safe character, and a rupture of a boiler tube produced merely a spray of water and steam with a slight hissing sound and not the fearful explosion that one might have anticipated, considering the tremendous pressures employed. This safety feature is, of course, due to the fact that the tubes are small and that they are filled largely by water and not steam. There is a proposal under consideration to build, in the United States, a locomotive equipped with a Benson boiler.

POWER PLANT ENGINEERING

Steam Reheating.—High superheat in turbine installations is being increasingly used. Practically all of the advantage resulting from its use is due to its action in increasing

the number of stages of the turbine in which the steam remains dry. Engineers have, therefore, used high pressures and compound turbines with provision for reheating the steam between cylinders. Here they ran into a difficulty. If this reheating is done in the boiler room it requires large pipes leading to and from the reheating boiler and also involves some loss in pressure which partially offsets the gain from reheating. One of the Chicago stations proposes to overcome this difficulty by reheating the steam near the turbine by means of high pressure steam. The chief objection to this method is the fairly low reheat temperature attainable. This will be the first American installation of a live steam reheater and will be used in connection with a 90,000 k.w. cross-compound turbine. This is, by the way, a good illustration of the modern spirit of enterprise. Some ten years ago few engineers would dare to introduce such a novel device on a unit of this huge size.

In Europe they are working hard with the idea of removing the boiler drum from the fire and evaporating the water indirectly. Among these attempts may be mentioned the Hartmann boiler at Cassel, where the evaporating is done by high pressure steam generated in a coil boiler with small outside drums. This steam is passed through the coil in the main boiler drum to produce the major evaporating effect. Another arrangement is used by Loeffler in Vienna, who generates highly superheated steam in a coil boiler and then carries out the evaporation in a drum similar to a steam accumulator.

Internal Combustion Boilers.—Sometime before the war, a European inventor—Brunler—built a boiler in which a mixture of atomized oil and air was blown in right into the water space at the bottom of the boiler, the air flow being such that a space free from water was maintained. This mixture was ignited and, of course, the entire heat of combustion went into the water—there being no loss through the boiler walls or at the stack. Not only this but the combustion appeared to show more than 100% efficiency, more heat being de-

livered to the water than was indicated to be developed in process of combustion by calorimeter tests. This was explained by the fact that radiant heat was utilized here and that it was not indicated in the calorimeter test.

Within the last year considerable work has been done, particularly in England, in the development of this type of combustion, not only by Brunler, but by several other inventors. Because of the large amount of non-condensable gases mixing with the steam, this process does not seem to be adaptable to power generation of the ordinary kind, but may prove to be valuable for mechanical processes. English engineers are, however, said to be working on a locomotive boiler on the Brunler principle.

Steam Pressure Transformer.—A radically novel device invented by Dr. Ernst Kuenemann of Berlin has been described by Prof. Lionel S. Marks of Harvard University (*Mechanical Engineering*, June, 1927). The purpose of this device is to utilize low pressure exhaust steam by raising it to a high temperature and pressure, and then employing it in some industrial process. In the Kuenemann device, use is made of the fact that the boiling point of a solution such as potassium or sodium hydroxide in water is higher than that of water at the same pressure. If exhaust steam at atmospheric pressure is blown into such a solution at a concentration having a boiling point of 300 degrees F. and if the solution is already at a temperature of 300 degrees F., the exhaust steam coming in at 212 degrees F. will be condensed by the high temperature solution and will dilute that solution. The latent heat of the exhaust steam is liberated and also the heat of dilution and, except for the heat used in raising the condensed steam from 212 to 300 degrees F., this liberated heat will be available at 300 degrees F. and can be utilized for generating steam at that temperature and at the corresponding saturation pressure. The diluted solution must of course be reconcentrated, which can be done in another vessel. It does not appear that the device has been used commercially.

An outstanding example of the economy in modern utilization of fuel is shown by the Columbia River Power Station of the Columbia Power Company, located on the Ohio River twenty miles below Cincinnati. In this case the turbine equipment consists of two tandem units of 45,000 k.w.h. with a steam pressure, at the throttle, of 600 pounds, at a total temperature of 730 degrees. The operation in December, 1926, showed 12,495 b.t.u. per k.w.h. of net output. (A k.w.h. output is the net k.w.h. supplied to the transmission lines, exclusive of all power and light used in the station.) Such a remarkable economy could be secured only by skillful design of the plant together with the use of high pressure steam. Where low pressure steam is used the results expressed in terms of heat units per k.w.h. are not quite as good and, for example, the new plant of the Hudson Avenue Station of the Brooklyn Edison Company on 300 pounds steam pressure shows the best thermal efficiency of only 19.78%, corresponding to 17,200 b.t.u.'s per k.w.h. That does not mean, however, that the design of the latter station is poorer. A lower steam pressure affords certain economies in other directions and, while detail figures permitting comparison are not available, there is good reason to believe that the ultimate cost per unit of power sent out does not materially differ between these two plants.

New Ways of Power Generation.

—One of the most radical proposals for generating power has been made by Georges Claude, well known as the discoverer of the method of dissolving acetylene in acetone, as the inventor of a system of liquefaction of air, of producing synthetic ammonia and several other important inventions. The Claude system of power generation is based on the well-known difference between the temperature of water in the upper layers of the ocean which varies from, say, 78 to 86 degrees F. and a temperature at the depth of, say, 3,300 feet which is said to be from 39 to 41 degrees F. Briefly, what Claude proposes to do is to utilize the surface water from the sea in an evaporator

connected through the steam turbine to a condenser supplied with cold water from a great depth. An elaborate calculation would appear to indicate that it is possible to develop power in this way. The scheme was not received favorably by the engineering press. For example, an editorial, in *The Engineer* of Nov. 26, 1926, pointed out that the boilers, condensers and turbines, would all be proportionately enormous and it would be impossible to maintain the desired high vacuum in such a system.

The suggestion of digging an enormously deep hole so as to utilize the internal heat of the earth has come up again in England, only instead of the ten-mile deep shaft which was suggested by Sir Charles Parsons, a forty-mile shaft was brought up.

Mechanical Water Gas Generator.—An experimental mechanical water gas generator was designed about two years ago by the engineers of the United Gas Improvement Company and installed at the Philadelphia Gas Works. It is only in the past year, however, that it has been started up. It is equipped with hydraulic operation and automatic control so that the entire running of the generator house is handled by one man, and the major portion of his time is consumed in general supervision of the apparatus and reading the various meters and gages. In this way, the unpleasant and hard task of removing the clinker and dumping the ashes is taken care of mechanically. In addition to which, the mechanical generator, with a waste heat boiler, makes a very desirable combination for steam production for gas making.

Dry Quenching of Coke.—In the field of gas manufacture much interest has been caused by a process of this character installed at Rochester, (Sulzer Process).

It is stated that this process of dry quenching implies the transformation of the sensible heat of the hot coke into steam at 140 lb. pressure by circulating inert gas through the hot coke in a container and thence through a boiler. The results indicate a heat recovery of 69 per cent

of the sensible heat. The following is mentioned, largely to show what a change in process, if successful, may mean financially under the present system of enormous outputs: The total quantity of by-product coke produced in 1926 was 44,377,000 tons. Assuming that 70 per cent of this is under conditions where the steam produced can be used effectively, the potential steam production of this process would be 13,300,000,000 lbs. per year.

Coal Utilization.—Under the present strenuous conditions of competition and comparatively high labor costs throughout the world, the engineering profession has come to a full realization of the wastefulness of direct burning of "coal as mined" under boilers. This is accentuated by the growing demand for liquid fuel for internal combustion engineers, particularly in land, water and air transportation, together with the realization of the fact that the underground supplies of liquid fuel are far from being inexhaustible at their present rate of consumption. What has come to be known as coal liquefaction or, better, coal utilization, has been the result of the combined action of all these factors.

The International Conference on Bituminous Coal held in Pittsburgh, November 15-18, 1926, brought together the best opinions on this subject of the engineering profession and has shown that, while the problem has not yet been commercially solved, it is apparently approaching such a solution. This development led to somewhat unexpected results. The economic success of the production of many kinds of liquid fuels from coal depends to a considerable extent on the possibility of selling the by-products. Hitherto the most valuable by-products, namely combinations of ammonia, have found their chief market in the form of fertilizers, as sources of intensified supply of nitrogen to plants. They have thus come into competition with other fertilizers such as those made from synthetic ammonia produced by direct combination of nitrogen and hydrogen (Hader, Claude, Fauser and other processes), and also with Chile

saltpeter now being produced by improved methods.

To meet the situation, German chemists developed an entirely new kind of fertilizer called Nitrophos, where ammonia compounds are combined with phosphorous compounds, thus producing what might be called a complete fertilizer. This, in its turn, necessitated a development of methods of manufacture of white phosphorous. Incidentally the latter may prove of paramount value as a material of warfare when used in the form of Stokes shells.

The advance in the art of coal utilization is shown by the recent developments of a method to burn Rhode Island coals. This coal is of an unusually high ash content, low volatile value and low fusing point which causes clinkering. It has been jocularly stated that on the Day of Judgment when the whole world will be aflame, Rhode Island coal mines will be the safest place to be in. It is claimed now that this coal has been made burnable by the application of the Trent process. In this process oil is added to coal after the latter has been properly pulverized. The coal particles stick together while the ash or dirt is carried off by water.

In the field of low temperature carbonization there appears to be some real progress. The work is substantially being done on somewhat different lines in Germany from the way in which it is done in America and the rest of Europe. In these latter countries, an effort is made to produce fractional distillation of coal by subjecting it to a graduated series of temperatures, and the difference between the various systems proposed lies in the method of achieving this end.

In Germany they are developing methods for the hydrogenation of coal, the idea being not only to break up the coal into its various derivatives, but to modify the character of these derivatives by increasing their hydrogen content. Since, however, hydrogen is not an active element under ordinary pressures and temperatures, resort is made to the so-called catalyzers or materials

which by their very presence accelerate, without taking part in it otherwise than as an intermediary, the reaction between the hydrogen and the constituents of the coal. Such catalyzers as may be used are powdered or spongy nickel, platinum, and various oxides. Only the cheaper materials are, of course, suitable for coal liquefaction. The German process has progressed so far that the Standard Oil Company of New Jersey saw fit to acquire an interest in their American rights.

DIESEL ENGINES

In this field there has been a lack of any great advance. The Diesel engine has apparently reached its highest form of development in the fields in which it is being applied and new types have not yet been sufficiently developed to extend its field of application. In the latter connection some progress is, however, being made, a number of new types having been brought out, none of which appears to have reached the stage of truly commercial development. Two of these may be especially mentioned. One (Acro) is a German development and is claimed to have shown a fuel economy permitting it to run at about 0.6 cents per mile while installed in an automobile. The other is the 75 h.p., 650 r.p.m., Atlas Imperial Diesel recently tried on a Caterpillar tractor. The attempts to apply Diesel engines to aircraft seem to be still in a comparatively early stage of experimental development.

In applications on shipboard the Diesel seems to be making excellent progress both in the size of units and number of vessels so equipped. The *Augustus*, the largest motor ship in the world, 33,000 gross tons, equipped with four engines, made her maiden voyage in November, 1927, while the largest cylinder output ever attained was secured from a Sulzer experimental one-cylinder engine, namely 2,900 indicated horsepower. The U. S. Shipping Board continues its conversion of class A steamships into Diesel-equipped vessels and has released several orders. In the majority of cases the conversion is of

the type of mechanical transmission between the Diesel and the propeller, but in a few cases electrical transmission will be used.

HYDRAULICS

While enormous progress has been made within the last few years, competition on the part of the modern steam plant is becoming more and more acute and the steam plant has already reached a position where it is actually cheaper, or very nearly so, to make power by steam than by water unless, for some reason, the initial cost of the hydraulic installation can be kept down unusually low.

Since the development of the propeller type turbine, no new types have appeared, but there has been a constant improvement in the details of turbine machinery. Among these has been progress in the use of rubber. Rubber seals have been introduced as a means for decreasing leakage around guide vanes when in closed position at shut-down. Water-lubricated rubber bearings have also been used recently with great success. As a means of maintaining the turbine runner in its exactly central position a hemispherical-combined thrust and turbine guide-bearing (designed by Albert Kingsbury) is being developed. In the case of tunnels lined with concrete, the Hackley pneumatic apparatus is used for forcing concrete behind the forms of tunnels. This apparatus deposits the concrete without segregation and in horizontal layers in a very effective manner up to, and including, even the crowns of the arches.

In the light of the present advanced state of the art there is no doubt that there are numerous old plants operating in systems and under comparatively ancient water-power concessions that can well afford to be rebuilt or modernized. A study of such possibilities will in numerous cases prove to offer a handsome return upon the capital investment required. Another, and probably the greatest opportunity for economic hydraulic power, lies in the complete and balanced development of entire streams and watersheds into

a single project. There are probably numerous cases where the existence of isolated power developments has served to distract attention from the possibilities of a river or watershed which would be readily apparent if existing developments were removed from the picture. An effort should be made to uncover these and analyze their possibilities in the light of present-day knowledge.

MACHINE SHOP PRACTICE

Tool Lubrication.—One of the greatest advances in machine-tool design has been made in positive lubrication. In many machines all important bearings are now oiled from a central reservoir by means of force-feed pumps and even full force-feed oiling of the whole machine has been accomplished. Either a circulating or a "one-shot" system is used for the purpose. An oil purifier of the type used on automobiles has been applied to at least one make of machine-tool.

Hydraulic Drives.—The hydraulic medium for transmitting power has been adopted to a surprising extent. It has been applied to the auxiliary feed and traverse movements, where it is of especial value because of its flexibility, easy control, and low liability to derangement and breakage. Particularly rapid strides have been made in applying this type of feed to drilling machines, grinders, and broaching machines, although other types, including milling machines, have been so equipped. Of the two hydraulic drives in common use, the cylinder- and piston-type is the more frequently applied, although in some of the larger machines having long traverse movements, a hydraulic motor is connected directly to a pinion in mesh with a rack on the moving part. In this way there are no limiting factors in respect to length of movement inherent in the drive.

Grinding Process.—Outside the automotive field, as well as within, the grinding process has been making great headway. New abrasives and new types of wheels have done much in the way of production. New bonds have permitted greatly increased speeds. Grinding of machine

ways is an accomplished fact. Spindles are being subjected to an extra-fine grinding operation that gives a surface comparable to the best in automotive practice; considerably longer life is expected to result. Semi-automatic and full-automatic machines that put the work in place, perform the operation, and pass the finished piece on to the next machine are coming into the grinding field. In line with the general trend, more attention has been given to securing accuracy with a minimum of the operator's attention, even with remarkably close tolerances. Centerless grinding has made great strides, both in machine design and from the point of view of increased knowledge of the possibilities by the method. Semi-automatic, multiple-spindle, cylinder grinding has been developed. Worm-grinding machines have been introduced. Segmental grinding-wheel chucks have been placed on the market.

Gages.—A new method of dimensioning chamber sizes in rifle barrels and a standard method of making and checking chamber and barrel gages within 1/200 of 0.001 in. have been discovered. By the use of this method duplicate chamber plugs may be made by several gage makers, without variation among the gages of more than 1/4 to 0.0001 in. in diameter and with variation of 0 in length. It is obvious that these methods may be applied to gages for other classes of work, and may be instrumental in obtaining the extreme accuracy toward which the machinery industries are tending.

Supply of Skilled Mechanics.—There is still a feeling on the part of some members of the industry that skilled mechanics are no longer being trained in quantities sufficient for the good of the industry. Other members feel that the supply is keeping pace with economic law—that the transfer of skill from man to machine has made relatively few mechanics necessary. No matter which viewpoint may prove to be the better, it is essential that the industry train boys for shop positions, a matter increasingly attracting the attention of the industry.

Cutting Tools.—There are predictions that at some time in the future we may expect radical improvement in cutting tools, an improvement which will cause the new tools to be so much more productive than those of today that the increased production will be comparable to that resulting from the introduction of high-speed steel. Whether such improvement will appear during the next year or within the next few days, is conjectural. The advent of a material, or a process, that would have such an effect would revolutionize machine-shop practice.

RESEARCH

Sheet Rolling Mills.—This is becoming one of the fundamental factors in all branches of engineering. A striking illustration of the value of research and investigation has been the development of the four-high continuous sheet rolling mill. It was only late in 1926 that the first mill was started on a big scale, although some rolling was done before in that way, elsewhere. By the end of 1927 at least five such mills were either in operation or under construction, and it is estimated that seven mills would have enough production to take care of all the tonnage of hot rolled sheet goods in the country, which does not, of course, mean that seven continuous mills will actually replace all the non-continuous mills.

Textile Industry.—A comprehension of the value of research for the textile industry is strikingly shown by the program being carried through, for example, by the Pacific Mills. There, one of the main problems is to eliminate what the mill organizations call "exceptions." That is, for example, excessively weak threads that would break, and the like. Through the Research Work Department greater uniformity of raw materials is secured, which leads to the possibility of adjusting the rolls more precisely and greatly increasing the output. To do this, new methods and instruments had to be developed. For example, a machine for quick measurement of fiber length.

Locomotive Boilers.—In a very different field an attempt is made to im-

prove by research the locomotive boiler. Here the problem is to get a reliable rule for determining the rate of transfer of heat in the fire box, which is important as providing a correct method for determining the evaporative value of the fire box heating surface. In this connection, a formula has been developed for estimating the transfer on heat by gas convection. Incidentally, it appears that doubling the rate of gas flow with the same surface of the flue very nearly doubles the total amount of heat transferred from the gas to the flue.

STATE OF MATTER

Considerable progress has been made towards better comprehension of what might be called various states of aggregation of matter. The work of Davey, Sir William H. Bragg, Prof. Katz of the University of Amsterdam, and others, has gone a long way towards making doubtful the previously universally accepted idea that some matter is crystalline and other is amorphous. The so-called amorphous carbon was found to consist of minute crystals, so minute that they could not be distinguished with former apparatus. Rubber is now also found to consist of tightly interlocked crystalline formations and even colloids, always viewed as the very antithesis of crystalline structures, were found in many cases to be crystalline nevertheless. It is quite certain, however, that the above is of truly universal application.

Another idea which is gradually being laid on the shelf is that there are only three states of matter—solid, liquid and gases. In hydraulics, it is the fundamental dogma that liquids have no tensile strength and yet films which are decidedly made up of liquid material have an amazing stability and capacity for resisting such stresses as are imposed, for example, by the rotating shaft or reciprocating piston on a layer of lubricant. A film not being a solid by any means, but being capable of resisting tensile strains, represents a state of matter intermediary between solids and liquids and possesses a combination of properties entirely of its own. The previous work of Dewar

on soap bubbles has materially contributed towards the knowledge of films.

MEASUREMENTS

This is an enormously important field for the mechanical engineer because, when all is said and done, he can reliably interpret occurrences only to the degree to which they can be measured. Material progress in many fields of measurement has been achieved, and the following instances are cited merely by way of illustration.

One of the questions which designers of engines always wanted to see answered was the amount of radial pressure exerted by piston rings on the cylinder wall. Several devices have been made and quite lately a Japanese scientist, Keititi Ebihara, described one in which resort is made to the piezoelectric method. This method is based on the fact that certain crystals, for example, quartz, vary in electrical conductivity with pressure. In this case these crystals were set where they would be subject to the piston ring pressure and the electrical conductivity measured by a sensitive electroscope. Among other things, the effect of the annealing temperature of the ring on the pressure distribution has been measured and, as a result of the work, a ring has been designed which is said to exert a nearly uniform pressure on the cylinder wall.

Another instrument recently developed is the so-called Pi Meter or Indicator of average pressure. In electrical engineering a wattmeter gives a direct reading of water output. The average pressure indicator substantially does the same for the mechanical engineer and, by giving a record of the average pressure over a period of time, permits to obtain a precise

picture of the total output of an engine.

WELDING

Very rapid progress is being made in this field. Means are being developed for determining the quality of a weld without destroying the piece, and information is being collected on the endurance limit of welded articles. In tests made by R. R. Moore at McCook Field, Dayton, O., it has been shown that in arc welds poor fusion was observed in a number of cases and the endurance limit was only 24,000 lbs. per square inch, the same as with gas welds. The atomic hydrogen process gave welds with a tensile strength of 50,400 lbs. per square inch. These tests also demonstrated that the metal deposited in the weld is not inherently weak, even under stresses repeated an enormous number of times.

Several new types of welders have made their appearance. At the Shipping and Engineering Exhibition in London a method of welding was used in which, when working with three-phase alternating current, it becomes possible to use all the three phases of the arc while formerly it was necessary to draw the supply from one phase of the system. The arrangement is such that a rotating arc is obtained between the electrodes and the work, and only one phase gives zero at any instant. Apart from the fact that the system balances the load on the electric mains, it has been found that the open circuit voltage can be considerably reduced while the power factor is greatly improved. The low voltage (open circuit pressure as low as 35 and the voltage across the arc only 25) makes the process quite safe, while the rate at which metal can be deposited is very greatly increased.

ELECTRICAL ENGINEERING

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GENERAL

Improvement and Growth in the electrical world have come to be commonplace; the year 1927 offered no

exception. The electric light and power companies and the communication companies continued to expand; railway electrification progressed, and

electrical manufacturing was almost on a par with that of the maximum year, 1926.

Consolidation of utilities and formation of holding companies to achieve economies, and interconnections to obtain both economies and reliability of service continued apace with the value of the latter vividly shown during two major catastrophes,—the Mississippi and the New England floods.

Capital and Revenue.—The industry as a whole faced the year with an invested capital of approximately 20 billion, an annual gross revenue of 6 billion and annual capital additions of one and a half billion dollars. The invested capital was distributed amongst the four major divisions of the whole industry as follows:

Light and power companies	8.5 billion dollars		
Electric railways	6.0	"	"
Communication companies	2.7	"	"
Electrical manufacturers..	2.6	"	"

Cost of Electric Service.—Turning from billions of dollars to cents, the average cost of electric service in homes is 8 cents per day, or about 0.75 per cent of the family budget; the average cost in industry (with some minor exceptions) is 0.5 to 2.0 per cent of the total cost of the finished product, and certainly cannot be considered a burden, and the speaker still reminds his lay audiences that the entire electric bill of the nation for all purposes is less than the bill for candy and tobacco, while the cigarette bill alone is 50 per cent greater than that for electric service in all the homes of the country.

Commercial Projects.—Emphasis on development, construction, organization and financing in the power field is gradually giving place to stress on commercial projects and policy. The building of a load with household apparatus and the development of the farm load are being pushed, although in this connection it is worth noting that an order of the Pennsylvania Public Service Commission compelling power companies to extend their lines where there is at least one contracting consumer per mile, the company paying the entire cost when there are three or more

consumers per mile, has been declared unworkable after a year's trial. A new order more favorable to the power companies has been issued.

Steam Plant Generation.—Another change in viewpoint, evidenced during the last few years and due largely to new economies in steam plant generation, is illustrated by these excerpts from editorials in a technical journal:

"The trend toward extensive steam electric plan construction in California is a striking example of a change that is taking place." "Hydro-electric construction on the Pacific Coast appears to be entering a slowing-down period because of two important factors that are militating against water power in favor of steam. On the one hand are hampering restrictions which are tending to increase the cost of hydro-electric construction, if not to make it impracticable altogether in some cases, and on the other hand is the decreasing cost of steam power produced by large units of high economy. At the present time there is probably no large load center on the Pacific Coast where steam-generated power cannot be produced more cheaply with existing fuels by local units of large capacity than it can by distant hydro-electric stations." "Steam station production costs at a water power site are competitive with water power costs in many instances."

Technical improvements have kept in step with the material progress of the industry. Most picturesque among the year's developments are the public telephone service with Europe, a practical demonstration of true television, and the new "largest" units which each year seems to bring. To these should be added 132,000 volt underground cables, 380,000 volt transmission lines, a promise of long distance transmission through the application of new principles, improvements in mercury boilers and hydrogen atmosphere apparatus to bring these nearer practicability with resultant economies, the electrodeposition of rubber and many others.

Standardization of almost everything in the industry from high voltage equipment to the smallest mo-

XIX. ENGINEERING AND CONSTRUCTION

tor is being urged and appears a reality of the not far distant future. In the electrical field alone there are at present at least 30 standard-making organizations, in spite of which it is said that five to ten hundred million dollars' worth of special apparatus now in the United States would have cost 20 to 40 per cent less if real standardization existed. The American Institute of Electrical Engineers has suggested "that it be the authorized representative . . . for standards in the electrical industry," but opposition to this has arisen, and various alternate plans have been proposed. The demand from users and manufacturers of electrical products for this improvement is increasing, however, and agreement within the industry will probably come soon.

Research.—Industry and the Government spend about \$200,000,000 annually for industrial research work, colleges less than one per cent of this. Adverse criticism of the volume of college research has appeared.

Engineering Foundation School.—A school for engineering teachers, where details of technique were discussed, was held in the summer of 1927. If judged successful the school, conducted by the Engineering Foundation, will be continued.

POWER

Financial.—New financing of elec-

tric light and power companies for the first eleven months of 1927, with a total of \$1,440,302,200, showed an increase of more than 20 per cent over that for the entire last year. Monthly averages of returns to investors indicated a variation from 5.1 per cent to 5.7 per cent, whereas the average rate of return for nine months of 1926 was over 5.50 per cent and reached a monthly peak of 6.10 per cent. The low rate of return and the volume of financing has led to the statement that "the light and power industry has established a credit position on the money markets second to that of no other industry." Sale of stock on the customer ownership plan was about equal to that of last year, amounting to \$150,800,000 for the first seven months. In 1926 total sales were \$236,000,000 to 248,867 persons.

Revenue.—Central station gross revenue has been increasing since 1921 at a rate of approximately 11 per cent per year compounded; in the previous period (1913-1920) the rate was 16 per cent. The first nine months of 1927 showed an increase of 10 per cent over the corresponding period of 1926, a similar increase in kw. hours generated, and a smaller increase (7.6%) in operating and maintenance expenses (not including interest, taxes, depreciation or sinking fund payments). The figures are as follows:

	Gross Revenue	Operating and Maintenance Expenses	Kw. Hrs. Generated
Jan.-Sept., 1927.....	\$1,300,700,000	\$564,090,000	\$55,291,926,000
Jan.-Sept., 1926	\$1,182,900,000	\$524,220,000	\$50,102,138,000
Increase over 1926	10%	7.6%	10%

It is interesting in this connection to note the division of gross revenue for hydro and steam plants. For a representative group of each these data apply (figures are per cent of gross revenue):

TABLE I.—DIVISION OF GROSS-GROUP OF HYDRO-ELECTRIC PLANTS

Per Cent	1920	1921	1922	1923	1924	1925
Operating costs	39	39	37	37	36	36
Taxes	7	8	8	8	9	9
Interest	25	26	25	24	23	21
Depreciation	5	6	6	5	6	6
Dividends	11	16	18	20	20	20
Surplus	13	5	6	6	6	8
	100	100	100	100	100	100

ELECTRICAL ENGINEERING

TABLE II.—DIVISION OF GROSS-GROUP OF STEAM PLANTS

Per Cent	1920	1921	1922	1923	1924	1925
Operating costs	62	57	53	53	52	50
Taxes	7	8	8	8	8	8
Interest	14	15	15	13	13	13
Depreciation	5	7	8	8	7	7
Dividends	8	8	9	10	12	13
Surplus	4	5	7	8	8	9
	100	100	100	100	100	100

Operating Costs.—Increasing economies in steam plants account for the large decrease in operating costs which is not paralleled in the hydro plants. This increased economy is strikingly shown by the increase of 95 per cent in the amount of energy generated from coal, gas and oil in the past 7 years, accompanied by an increase of only 17 per cent in fuel consumption, which, expressed in terms of coal, was equivalent to a saving of 30,000,000 tons in 1926.

Output.—Complete data for 1926, which became available in the middle of 1927, indicated that for North America 126 electric light and power systems in this country, 10 in Canada and one in Mexico, and 15 electric railways had an output of more than 100,000,000 kw. hrs. each. In 1925 the figures were 110, 7, 0 and 12 respectively. The 126 light and power plants represent in output 85 per cent of the nation's total, and are headed by the world's largest system, the Buffalo, Niagara and Eastern Power Corp., with an output of 4,464,000,000 kw. hours. Of the whole output of this group 13.3 per cent was purchased by power companies from other power companies. This relatively high figure shows the extent to which interconnection is making intercompany sales possible.

Consumption.—The total consumption in 1926 was 74,000,000,000 kw. hrs., and for 1927 will be in excess of 80,000,000,000. This is 700 kw. hrs. per capita for this country. The data indicates that seasonal variations in load are being wiped out, due mostly to increased use of electricity in industry and the building of a load with household appliances. Of the total output, 96 per cent was alternating current, and the rather rash prediction is made that the not

far distant future will see much direct current apparatus considered special.

INTERCONNECTION AND MANAGEMENT

The Mississippi flood provided one of the most startling illustrations of the advantages of interconnection, as far as continuity of service is concerned, which has yet been seen. But for this a majority of the flooded towns would have been without service, for high water rendered the operation of many plants impossible. The estimated area affected was placed at 15,000 square miles, most of which had almost continuous service. Airplanes were used to patrol and locate breaks in transmission lines.

New England Flood.—While some parts of the flooded region were without service for two days or longer owing to submersion of plants and destruction of lines, in most places service was maintained. Interconnection again showed its value in this case. A third catastrophe of the year was the St. Louis tornado. Five days were required to restore complete service, after large damage was done to three companies. However, emergency service to hospitals and relief stations, etc., was available within twelve hours.

Interchanges.—During the year, New Orleans and Chicago were interconnected, while late in 1926 Boston and Chicago were also. The super-power systems dreamed of in the past have thus become physical realities, but transmission losses prevent the interchange of large blocks of power between the extremes of the interconnected systems while transformer capacity at switching points further limits the exchange be-

tween any of the interconnected stations.

Schools of Thought.—Several schools of thought concerning the interconnecting of systems have developed among engineers and utility executives. Concerning the technical side, some prefer systems linked rigidly together, forming one complete system. Others prefer loose linking, in which a fault causes a section to be disconnected at once from the rest. From the commercial viewpoint, some prefer independent systems linked only for mutual aid in time of emergency, while others want to take full advantage of savings due to differences in time of peak loads on the systems joined, use of dump hydro power, etc. Operating experiences of the near future should determine which is the better of these viewpoints.

Technical and Economic Problems.

—With the increase of interconnection comes increased technical and economic problems, the technical problems including questions of stability, synchronization and frequency changes and the economic questions of maximum efficiency, etc. One system, which will actively interchange power to obtain maximum economies and have one man in complete charge of the load on the entire system, is that planned this year by the Philadelphia Electric Company, Pennsylvania Light and Power Company, and Public Service Electric and Gas Company of New Jersey. This new pool will ultimately contain 3,000,000 h.p.

LEGAL DECISIONS

Worcester Rate Case.—Possibly the most interesting legal development of the year is the Worcester (Mass.) rate case. In the face of a decision of the U. S. Supreme Court that reproduction cost, less depreciation, is to be taken as a base in determining rates, the Massachusetts Department of Public Utilities has reaffirmed its belief in the so-called Massachusetts theory of rate regulation based on prudent investment, and has ordered the Worcester Electric Light Company to reduce its rates. The Worcester company claimed a valuation 80 per cent greater than

that allowed by the state department, and at once obtained an injunction against the rate-reducing order on the basis of the previous Supreme Court decision. On the other hand, at the very end of the year comes the news that the Interstate Commerce Commission using the prudent investment base in the case of railroad valuation, has been upheld by the Federal Courts. This case will at once be appealed to the Supreme Court, as will the Worcester claim.

Interstate Regulation.—In another case the Supreme Court reaffirmed that contracts for the wholesale (not retail) purchase of electricity where the electricity is generated in one State and transmitted to another are not subject to regulation by state commissions. Since no legislative provision is made for such regulation, this interstate commerce is unregulated by any state or Federal body. However, in an effort to avoid government control, power companies have been urged to include voluntarily in contracts provision for regulation by a state commission.

LEGISLATIVE

In Congress two items of interest to the political and electrical world were discussed. Muscle Shoals, the Government hydro plant which was erected during the war and whose future is to be determined by Congress, was left in the same legal niche it occupied at the beginning of the year, in spite of new investigations and new offers of private firms. In the meantime, the Federal Power Commission has refused to sanction any projects on the Clinch River in Tennessee pending disposal of the Muscle Shoals question by Congress. This has tied up some proposed hydroelectric developments.

Boulder Dam Bill.—With more definite action Congress defeated the Boulder Dam bill, proposing that the Federal Government construct a dam at Boulder Canyon on the Colorado River for flood control, irrigation and power. California especially desired passage of the bill while nearby states, led by Arizona, opposed it. It is practically certain that the bill will reappear in Congress, and repre-

sentatives of the seven states concerned are meeting in an attempt to compromise differences. In both the Boulder Dam and Muscle Shoals cases it has been proposed that the Government enter permanently into the power business. The opposition to this in Congress has been persistent and vigorous.

Competition.—The Federal Trade Commission after an investigation into competitive conditions failed to censure any large electrical manufacturing company despite allegations in legislative halls of unfair competition. It did, however, complain of "the extreme degree to which pyramiding has been carried in superposing a series of holding companies over the underlying operating companies" in the power field.

Maine Exportation Case.—A bill legalizing the exportation of power out of Maine was vetoed by the Governor. It was an attempt to overcome an old law of this state prohibiting Maine-developed power from crossing the state boundary, in the hope that the water power possibilities of the state would draw industries into it.

Los Angeles.—Voters of Los Angeles, California, defeated a proposal to put the city in the power business by purchase or condemnation of the local power company. In general, municipal plants have decreased in number during the year due chiefly to absorption by large systems offering improved rates.

St. Lawrence Project.—Consideration of the great power development possible led a committee to recommend a shipway from the Great Lakes to the Atlantic via the St. Lawrence River. Canada however has temporarily refused a proposal of the State Department of the United States that the two governments confer on the project. The St. Lawrence route (estimated cost \$150,000,000) was chosen over a suggested All-American Canal through New York State (cost \$631,000,000), the vastly lower cost figure for the St. Lawrence waterway being arrived at in consideration of the great power development that would be possible as a result of damming the stream for navigation purposes.

TRENDS IN STEAM PLANT ENGINEERING

Larger Units.—Improvements due largely to welded construction are enabling larger units to be built and completely wound at the factory than transportation limitations heretofore permitted. The tendency in central stations is toward larger units, and possibly higher generated voltages (23,000) where the load justifies these. A single shaft machine with a tandem compound turbine, now being built, is rated 157,000 kw. while multiple units rated 180,000 to 208,000 kw. are also under construction. The "huge" generators of five years past are midgets compared to these. High pressure steam (1200 lbs. at 800° F. maximum) is apparently on the threshold of a wide field of use, since more or less experimental installations have proved successful, and the mercury turbine has also passed through the same stage, a new 20,000 kw. unit having been ordered. Pulverized fuel equipments totalling 2,500,000 kw. are in operation, and a new unit type pulverizer of 15 tons has been placed in service, but stokers are holding their own, and new improvements on large stokers have appeared. Air preheating at 500° F. is accepted. With all these improvements engineers feel that large stations can be built to operate on from 12,000 to 14,000 B. T. U. per kw. hr. output at an installation cost of \$100 per kw., provided no unusual expenses such as high prices for real estate are encountered.

Columbia Station.—Since it portends the future, it is worth giving here some data concerning the Columbia station of the Columbia Gas and Electric Company which went into service January 1, 1926, and which has already almost reached the 12,000 B. T. U. per kw. hr. output mark. The equipment consists of two 45,000 kw. tandem turbo-generator units, using steam at 600 lbs. pressure and 725° F., the steam being reheated between high pressure and low pressure cylinders. The B. T. U. per kw. hr. were for October, 1926, 12,657; November, 12,529; December, 12,495. The load factor was about 65 per cent, output about 41,000,000 kw.

hrs. per month, and thermal efficiency 27 per cent. The figures are for output of the station, not output of the generators.

Steam Pressure.—The use of extreme pressures in steam is being limited by present materials used in turbines. An experimental boiler operating at a steam pressure of 3,250 lbs. has been in use, the steam pressure being reduced by throttling to 1,500 lbs. and superheated to 800° F. In 4,000 hours of service the alloy steel superheater tubes showed no signs of erosion.

Unit Efficiency.—The new mercury boiler and turbo-generator unit ordered is of 20,000 kw. capacity. In it are included all the improvements deemed advisable after study of the experimental installation of one fifth this capacity for a long period. The guaranteed efficiency is such as to give 1 kw. hr. for a little less than 11,000 B. T. U. The equipment is expected to produce 10,000 kw. from a mercury turbine driven generator and in addition about 125,000 pounds of steam per hr. at the station pressure of 260 pounds. The purchase is significant, in that it involves the design and construction of a unit of size suitable for many central stations.

Increase in steam pressure, or use of another medium such as mercury, aims simply at higher efficiency, although it is well to remember that efficiency of a machine and economic efficiency do not always parallel each other. A third method, now in the developmental stage, for improving the efficiency of electrical machines is the use of hydrogen in place of air as a cooling agent for generators. The chief losses in large machines are those due to windage; intimately tied up with this problem is that of ventilation. A hydrogen atmosphere has two clear-cut advantages: first, reduction of windage loss due to the density of the gas—one tenth that of air—and second, a large increase in heat conduction. The net result is a saving of one third the ordinary losses and a simultaneous increase in capacity of the machine by about 30 per cent. The gas has a heat conductivity seven times that of air for

the same temperature gradient, and is about 30 per cent more effective in wiping heat away from surfaces to be cooled. Hence, if operated at the same temperature in hydrogen as in air, the machine should deliver a much greater output. Various disadvantages such as possibility of explosion and corona, which forms at a much lower voltage in hydrogen than in air, have been disposed, investigations showing that corona in hydrogen does not injure insulation and devices having been developed for regulating the purity of the gas. The year witnessed the announcement of a liquid film seal to prevent leakage around shafts and the actual design of some of the largest machines for hydrogen cooling, although it is not planned to use this at once.

With a new nozzle developed so that liquid CO₂ can be expanded to atmospheric pressure without freezing, two large new stations are making use of this for generator fire protection. In case of fire, the CO₂ gas replaces the cooling air in the generators, which are completely enclosed. A 15,000 HP. Diesel electric generating set, said to be the largest in the world, has been installed at Hamburg, Germany. The generator has an output of 12,000 kw.

TRENDS IN WATER POWER ENGINEERING

While new hydro projects have been announced during the year, the previously indicated trend toward steam plants brings forcibly to mind the fact that although engineers of these latter may envision large increases of efficiency and economies in the future, hydro engineers have no such prospect at present. Changes are minor in character and hold no promise of great possibilities, indeed, water power systems "have almost reached the acme of perfection so far as efficiency is concerned." It is estimated that 55,000,000 hp. is available in the United States and approximately 12,000,000 hp. is developed.

Saluda River Dam.—One new development has plans for the largest dam in the United States, 8,000 ft. long and 188 ft. high, forming of the

waters impounded a lake 30 miles long and 3 miles wide. This is the 200,000 hp. project on the Saluda River in South Carolina. Another hydro project proposed is a development on the Potomac River near Washington, D. C. Much opposition is certain in this case. A third development is the proposed use of tidal power in the Petitcodiac River, N. B., Canada, to yield from 100,000 to 200,000 hp.

Impulse Units.—Only two or three years ago the largest impulse unit ever made had a capacity of 30,000 hp. Since then, the capacity has practically doubled. Wheels of 40,000 hp. under a head of 2400 ft. are now operating on the Pacific Coast, and others are being made that will have a capacity of 56,000 hp. under a head of 2,200 feet. There are also being constructed the highest head impulse units ever made in the United States. These will operate under a net head of 2,545 ft.

TRANSMISSION AND DISTRIBUTION

Underground Cables.—One of the outstanding technical features of 1926 was the use in commercial service of 132,000 volt underground cables—an answer to some of the problems of efficient transmission of large blocks of power in metropolitan sections. The cable is of the single conductor, hollow-core, oil-filled type, oil pressure being maintained by elevated reservoirs at various points to avoid gas voids in the insulation. The use of this oil offers a hazard and involves high maintenance costs, which may be overcome in the future. And just as these cables are the highest voltage underground cables used, so a new German transmission line (125 miles long) rated at 380 kv., represents the highest transmission voltage yet used. The conductors are hollow copper cables (42 mm. in diameter) necessitated by economic considerations.

Technical problems of transmission, some of which arise from extensive interconnection, have been partially solved. As part of the problem of maintaining stability on transmission systems, the speed with which reactive kva. can be changed with a change in load is an important factor.

This has led to the development of high speed excitation systems. In one case where this quick response system is to be installed, it is estimated that the capacity of a line is increased by 7,000 kw. Another attempt to increase the power capacity of a line by control of power factor caused the installation of the largest synchronous condensers now in existence (50,000 kva.).

Baum Principle.—Renewed interest in the possibility of long distance transmission was aroused when new patents in connection with the Baum principle were issued. This principle comprehends the use of a perfectly tuned transmission circuit, with control of wattless power by means of synchronous condensers along the line. The method involves constant potential transmission, with the addition of power at each regulating point. By its use it apparently makes possible the transmission of power over distances greater than the present practical 350-mile limit at 60 cycles; its technical correctness is not questioned, and its economic worth is being studied.

Hinged Crossarm.—One new mechanical feature introduced during the year was the hinged crossarm, designed to relieve torsional strain on a tower when a conductor breaks. Tests indicated the effectiveness of this new and simple device. Towers themselves are larger and stronger, and 220 kv. lines are being insulated so that service hazards from lightning are rendered negligible.

Lightning Protection.—The question of lightning protection of systems has been discussed and is still being debated; however, it appears that with present preventive schemes protection can be had. The cost of such protection is reasonable for low and high voltage lines, but not for those in the intermediate class (44 to 154 kv.). The experimental work in this branch has been continued, new data assembled and apparatus improved. The work, however, has been mostly field work, making use of the klydonograph, cathode ray oscillograph, etc. Meanwhile great strides have been recorded in the development of forms of artificial

lightning apparatus or surge generators with which representative approximations of service conditions can be obtained. A new type of lightning generator with several times the capacity of any heretofore built for similar potentials has recently been placed in operation. It is rated 1,000,000 volts and the instantaneous kva. on the full discharge is more than 7,000,000. While it is not practicable to reproduce in both voltage and energy a full-sized lightning stroke, satisfactory data for the design of electrical equipment can be found with test apparatus now available.

Substations continue to increase in size, importance and complexity. Tap changing transformers and armor clad switchgear are innovations, the former enabling approximately constant voltage to be kept on a line at most loads by changes in turn ratio. Distribution systems are tending toward higher voltages. Striking tests on air circuit breakers included the successful interruption of about 100,000 amps. a. c. at 440 volts.

RAILWAYS

Electrification.—The only large new electrification project of main line railroads announced during the year was that of the Reading Company, which will inaugurate a program calling for an initial expenditure of \$20,000,000 in the spring. Rumors of the electrification of more of the Chicago, Milwaukee and St. Paul were heard. The Pennsylvania is now working on the electrification of two branches; the Long Island completed 85 miles of main track electrification for freight work; the New York Central is planning to develop its own power for its contemplated electrification on the west side of Manhattan Island; the Great Northern Railway is electrifying its Cascade section and in addition is building a 7.8 mile tunnel, the longest railroad tunnel on the American continent, and the Chicago terminal electrification has been completed. The Paulista Railway in Brazil plans to extend its electrified line by 152 km., using American-made equipment.

It is worth noting that the first

mercury-arc power rectifiers to be used in this country on steam-road electrification were installed in connection with the Chicago terminal work (Illinois Central Railroad). The road uses direct current, supplied from 60 cycle a. c. sources through rectifiers and converters.

Gas-Electric Cars.—Some gas-electric cars were ordered during the year. Because of their cheapness for certain light suburban work, these cars have found application now on 20 roads although no road has a great number of them. In the suburban traction field new car design features have appeared. These include novel body lines and painting, bumpers similar to those of automobiles, and worm drive, a distinct change from existing practice. Weight and noise have been reduced.

COMMUNICATION

Transatlantic telephony and tele-vision are two of the most picturesque of the year's advances, telephone service with parts of Europe now being available from almost any part of this country and commercial television remaining only a question of economy. The two-way transatlantic circuit itself consists of 850 miles of land wire and 6,300 without wire, and in the radio end use is made of either a 5,000 or 22 meter wave length depending upon which gives the best reception. Static has not been entirely overcome and causes holdups. In addition to this new means of communication with Europe, direct cable service with Germany with new high speed cables is now possible for the first time since the war.

Commercial television.—The continuous viewing of a person or object miles away, was demonstrated using both telephone lines and wireless. A new light scanning scheme and the use of the largest photo electric cell helped make the demonstration possible. Complete view of the person "at the other end of the line" is given on a screen every fifteenth of a second, so that just as with motion pictures, movements appear continuous to the eye. Economic limitations have prevented the construction of

apparatus required to transmit more complex situations such as prize fights.

Telephones.—Developments in ordinary telephone work were mostly in the line of improved quality and economy. There were 17,800,000 telephones, 61 per cent of the world's total and 15 per hundred of population compared to 4 per hundred in Germany and 3 per hundred in England, in use in the United States at the beginning of the year, an increase of about 5 per cent over the previous year's total, and saturation is not as yet in sight. An average of 70,000,000 calls per day is made.

Radio.—In the radio field stand out two important legislative developments, and technical changes which include extensive use of alternating current vacuum tubes and improvement in carrier current systems. The two legislative developments are the creation of a Federal Radio Commission by Congress and the making of a treaty, by representatives of 80 nations meeting as the International Radiotelegraph Conference, binding virtually the whole civilized world on all points affecting international conflicts over the use of the ether for telegraphic messages.

The Federal Radio Commission, after spending some time in organizing and having its powers tested in Court, has decided to eliminate some of the confusion and congestion in the air attendant on the use of 89 wave lengths by some 700 broadcasting stations by closing down possibly 300 of the stations during the coming year.

INDUSTRIAL

Manufacturing.—Data obtained from 86 electrical manufacturers, which may be taken as representative

Year	Orders for Electrical Goods	Change (compared with corresponding period of previous year)
1922	\$ 669,149,071	
1923	886,017,721	+ 32 per cent
1924	867,146,580	— 2
1925	938,056,416	+ 8
1926	1,011,870,102	+ 7
1927 (9 months)	714,425,508	— 5

of the trend of electrical manufacturing business, show that for the first nine months of 1927 orders were a little less than 5 per cent below those of the corresponding 1926 period.

Data for the entire trade (1700 establishments) from the biennial census of manufacturers, show for 1923 a manufacturing output of value \$1,293,000,000 and for 1925, \$1,540,000,000, an increase of 19.17.

Electrical Manufacturers Convention.—For the first time in the history of the industry the electrical manufacturers held a general convention, embracing producers of apparatus, supplies, radio and appliances. It was not complete, in that many radio and household appliance manufacturers were absent. Development of market, cross-licensing of patents, etc., were discussed. It is believed that the carrying out of a real market development program as planned by the industry will materially improve business in 1928.

Exports and Sales.—Exports of electrical products for the first nine months increased more than 1.2 per cent, being \$73,379,472. Lamp sales for the entire year were estimated at 320 million large and 218 million small lamps, representing increases of 2½ per cent and 8 per cent respectively over 1926 sales. These sales are the largest in the history of the industry, and represent an increase of 75 per cent for large lamps and 200 per cent for small lamps in the last ten years. Mazda lamp prices were again reduced so that they now average 49.5 per cent lower than the 1914 level, compared with a 66 per cent increase in the average cost of commodities since that year.

Union Labels.—A decision of the Supreme Court that it is illegal for labor unions to demand that products used bear a union label is of much interest to electrical manufacturers, in that there has been increasing demand for this in the case of electrical products, culminating in a refusal in Chicago to install armored cable even in residences.

INDUSTRIAL DEVELOPMENTS

Welding.—Outstanding among industrial developments is the wide

use to which welding has been put in the last year. The causes are two fold, development of flame cutting of steel plate and increase in knowledge of the art of welding. Starting with small spark plugs, the list of welded work passes on up to 50,000 kva., machines, cranes, buildings and bridges. Although the movement has already attained great proportions, its full application is yet to come for there is every evidence that it will radiate to many new fields while more extensive operations are being carried out within its present scope.

Electric heating has likewise shown a great advance and improvement and wider use of electrical heating devices, ranging from residence water heaters to ovens for bread baking, glass making, ceramic baking and rivet heating are to be found. Electric heating is also being used in the annealing of high grade steel.

The Motor Field.—There has been little change, although across-the-line starting is being used more, and control has been improved. The synchronous motor is being applied to a wide variety of drives not possible a few years ago, and its use is being extended. One of its principal advantages is that when used on an industrial load, power factor correction can be had at little additional cost, and no increase in attendance of complication of control. So widespread has the movement for power factor correction become that synchronous motors, whose construction has now been refined to the point where it is practically as simple as that of a squirrel-cage induction motor and simpler than a wound rotor induction motor are now common in sizes down to 50 hp. for the combined purpose of carrying the load and improving the power factor.

Electrodeposition of rubber, announced in 1927, may revolutionize the rubber industry. It is possible to picture the remaking of old rubber goods, the making of any desired rubber compound in any shape, and the covering of wires with a rubber or rubber compound of very high dielectric strength. The process is now in an experimental stage. The electrodeposition of lead, zinc, and white

lead, however, has been placed on a commercial scale.

Relay and Meter Changes.—There may be mentioned improved designs of time delay and impedance relays and watt-hour meters and a new undervoltage device which meets a time delay requirement.

Miscellaneous industrial improvements include the first all electric car dumper used on the Great Lakes (to handle 120 ton cars of 165 tons gross weight at a rate of 40 per hour), new Diesel-electric ferry boats, a practically fool proof control system for a large bascule bridge, a new vacuum tube type of relay (the grid glow relay), a new photo electric cell with performance characteristics of unusual interest, and a long range searchlight gun which shoots pictures on clouds or buildings, and requires virtually no focusing.

Lighting.—Floodlighting of railroad yards and airports has led to the development of better searchlights and floodlights, and resistance lamps have been further standardized. Beyond this the illumination field has been quiescent. The new street lighting system of St. Louis, now one fourth finished, will be controlled by automatic astronomical clock operated relays which compensate for seasonal variations in the length of night and day. Resonant relays inoperative at ordinary line frequencies but responding to specially applied frequencies, control the switches at control points along the power lines.

The lighting of the new Holland Tunnel connecting New York City and New Jersey is unique in that it is arranged in such a way that the intensity is gradually increased at tunnel ends, so that the contrast from normal tunnel lighting to daylight is not severe. The power supply to the tunnel for lights, ventilating equipment and signal service is obtained from six different lines of two companies practically to insure reliability.

A new lamp known as the gaseous conductor lamp has been developed. The candlepower is too low to allow use as an illuminant, but high economy of operation makes its use as an indicator probable.

FOREIGN

The Central Electricity Board established under the electricity supply act of 1926 for the purpose of reorganizing and standardizing the generation and supply of electricity in the United Kingdom has announced plans under which 36 present generating stations of Scotland will ultimately be reduced to 10 and the frequency standardized at 50 cycles. Plans for changes in electrical systems in other parts of the British Isles have also been announced.

The board has adopted 132,000 volt cables as standard for much of the proposed interconnection, while for overhead transmission a standard tower 80 feet high has been designed with the aid of artists and architects. The towers are to be painted so that they will harmonize with their surroundings as much as possible.

London, Brighton and South Coast Railway.—An overhead electric system now installed on 127 single track miles of railway is being replaced by a third rail system, and 105 additional miles of road are being electrified. The third rail system is being made standard on this line.

Dnieper River Project.—An American engineer is to have charge of what will be the largest hydro electric development in Europe, a superpower project on the Dnieper River in the Ukrainian Soviet Republic. The ultimate capacity of the new plant will be 470,000 kw., it will cost \$70,000,000 and take six years for its construction. Locks are to be installed so that the river will remain navigable. The plant will be an important link in a superpower chain now being developed in the Soviet Union. In Leningrad a new peat-burning station of 120,000 kw. initial and 240,000 kw. ultimate capacity is planned.

Russia.—For the fiscal year 1925-26, the total output of Russian plants was 1,500,000,000 kw. hrs. A 10,000 kw. turbo-generator unit, the largest ever manufactured in Russia, was completed this year. Larger units (22,000 kw.) are under construction.

Germany.—The output of German plants for 1925 was 20,300,000,000 kw. hrs. In middle Germany a system utilizing nearly worthless lignite as

a fuel is being developed, and because of low costs, it is attracting some industries from more advantageously located old industrial centers. Extensive coupling of different networks provides reliability. The system already includes 2500 km. of 100,000 volt transmission lines.

On the Zschopau River at Saxony there has been constructed a water-power plant with an artificial storage basin of about 3,500,000 cu. ft. capacity. At periods of small load, water is pumped into the storage basin for later use.

Use is to be made on the Metropolitan railroads of Berlin of rectifier units rated 1200 kw., 1500 amps., at 800 volts continuously or in a cycle of 3000 amperes for 40 seconds followed by 300 for 50 seconds. The rectifiers will be directly connected to the third rail.

France.—In France a steam station of 400,000 kw. ultimate capacity is planned for Paris, whose electricity supply was augmented this year by the addition of a recently completed hydro plant on the Crouse River south of the city. Tidal power stations are being discussed and one of 6000 kw. capacity is planned for Aber-Wrac'h in Finistere. The total output of French plants in 1925 was about 10,000,000,000 kw.-hrs., and the installed capacity (Jan. 1, 1926) was 5,000,000 kw., of which about two-fifths was in hydro plants.

Italy.—In Italy the output for 1926 was 8,700,000,000 kw.-hrs. and the installed capacity 3,000,000 kw. More than 95 per cent of the output was from hydro plants. Hydro development in Italy is continuing, but in spite of relatively cheap hydro power it is now uneconomical to electrify more of the country's railroads.

Sweden.—Experiments have been made in Sweden in an attempt to determine the practicability of heating soil by electricity and thus enabling farmers to produce crops out of season. Definite results of the trials have not been announced.

Japan.—Electrical energy output of Japanese public utilities in 1925 was slightly less than 8,000,000,000 kw.-hrs., almost all of which came from steam plants.

Canada.—About 15 per cent of Canada's output of 10,000,000,000 kw.-hrs. in 1925 was exported to the United States. The installed capacity of hydro plants on Jan. 1, 1927, was

4,556,000 HP., which will be materially increased upon the completion of several large plants now being constructed in various parts of the Dominion.

AUTOMOTIVE ENGINEERING

By AUSTIN M. WOLF

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ENGINES

THE CAR IN GENERAL

Prominent developments in 1927 are: passenger cars with a new elegance of low, sweeping lines and color, increased power, speed and accelerating ability; general design refinement of chassis and body in the low-priced cars; trucks of the six-wheel type; and buses of larger seating capacity with a floor space from end to end.

High Compression Ratios with resultant increased power, greater torque at low speeds and provisions for increased life, mark the new engines. There are more eights, in both small and large sizes. The highest compression ratio is 6-1, the average passenger car engine approaching 5-1. The present wide distribution of anti-knock fuels makes the higher ratio feasible. The relative non-detonating characteristics of the small cylinder, special combustion chamber design, valve and spark plug position and aluminum heads are resorted to.

Pistons.—Aluminum pistons have gained considerably. Coupled with forged aluminum alloy connecting rods, inertia forces are cut down materially. Piston rings have increased in number, to five in some instances. Chromium-plated piston pins offer wear and corrosion resistance. Full floating pins are mostly favored.

Inlet.—Smaller inlet than exhaust valves are usual, chrome nickel being generally used for the former and silicon chrome for the latter. For increased flow, a flatter inlet valve seat angle is used by one maker. Drilling out crank pins to a large diameter for lightness, yet retaining torsional rigidity is used to some extent, in-

serted sleeves establishing the necessary oil passageways. Increasing the plate friction in a torsional vibration damper at high speed is obtained by the centrifugal deformation of a lead-impregnated rubber ring.

Cylinder Blocks are made of chrome nickel iron, a minimum Brinell hardness of 200 being obtainable. Pressed steel-timing case covers and front and rear engine supports are much used, as is common distributor and oil-pump drive, with a high location for the former. An extended distributor cap with molded-in plug leads allows short bronze springs to replace the high-tension wires. The wide use of rubber engine mountings requires a cable electrically to ground the engine to the frame. V-belt accessory drives are popular.

LUBRICATION AND VENTILATION

Cold weather and anti-scoring means are found in direct cylinder wall lubrication when the starter button is depressed, or the choke pulled out. A system utilizing splash for starting only has been introduced. Cylinder wall lubrication by the making of a hole in the connecting rod big end with a duct in the crankshaft is found in many designs. Force feed to the piston pin, through rifle-drilled connecting rods, assures lubrication at this point.

Oil filters for direct engine mounting replace the former dash type. A new type oil rectifier has a heat conduction plug extending down into the exhaust manifold. Crank case ventilation is usually obtained by passing cleaned air, under pressure of the fan and the forward motion of the car, into the crankcase and discharging it at the back end through a

down and rearwardly extending pipe. One maker, with forced draught air-cooling, taps the air duct, filters the air and with a thermostatically controlled valve allows circulation when the engine is cold and stops it when 120° F. is reached. There is then little chance of dilution or water condensation.

Fan- and water-pump rotor on one shaft have balanced thrusts. Chromium plating is used on pump shafts. Packing glands, backed up by long bearings with copious lubrication, aim at long life. Longitudinal cooling ribs on top of the cylinder-head casting have been introduced. The throttling type of thermostat, without by-pass, is most popular. Most stock engines are provided with sufficient space at the water header and a flange recess to allow insertion of this unit.

Eight-cylinder V-engines have side by side connecting rods. Knight engine improvements involve the use of two eccentric shafts, making shorter and lighter sleeves and reducing overall height.

FUEL SYSTEM AND MANIFOLDING

Air Cleaners.—New air cleaners have been developed. One consists of a filter type at low speed, a valve opening into a centrifugal separating chamber at high speed. A louvred valve-housing cover provides crankcase ventilation with air cleaning.

Carburetors.—Carburetor accelerating wells are provided with a thermostatically controlled bleeder valve which maintains more fuel in the well in cold weather than in warm. Larger full throttle operation, a camshaft-driven booster pump reduces the pressure in the vacuum tank. To replace the latter, one maker uses an eccentric-actuated diaphragm pump. The metallic disc-type of gasoline filter is the latest development, being easily cleaned and providing a .003" gap for filtration.

Manifold.—There is an increase in the down-draft type of intake manifold. Equidistant branches, from carburetor to cylinders, are used on some sixes. The trend of eight cylinder-in-line manifolding is toward the use of a duplex carburetor with

one branch feeding the center four cylinders. More efficient hot-spots are in use, with dash control. Some exhaust manifolds run centrally over the top of the engine to a hot-spot on the opposite side. A muffler with controllable by-pass lessens back pressure at the expense of some noise.

CLUTCH AND TRANSMISSION

Clutch Throw-out Units, piloted on a stationary sleeve around the clutch shaft are increasingly popular, as is the rubberized disc incorporated in the driven member. A spring drive with friction damping has been introduced. Discs are larger in diameter.

Gears.—Several forms of four-speed internal gear transmissions have appeared. Considering the small ratios involved, strength and quietness due to the larger number of teeth in contact and their improved rolling action, gives the internal gear an advantage over the spur. Study of the resonant characteristics of transmission cases caused several makers to change to different materials for same. Ball bearings have been excellent sound transmitters from gear to case, and it is now common practice to allow slight ball play. A large bottom or side-cover plate facilitates assembly and accessibility.

WHEELS AND SHAFTS

Universal Joint and Propeller Shafts.—Propeller shafts rolled from sheet steel and welded give a more nearly constant tube thickness, thus reducing whipping tendency. A stationary metal guard over the joints prevents grease throwing. Oil lubricated joints have been improved for oil retention. The torque-tube school of design has gained adherents. The three-joint propeller shaft for trucks and buses requires a self-aligning bearing or mounting at the center. A single-row radial ball bearing is now offered for this point, the balls being slightly undersize, allowing for limited misalignment.

Rear Axle.—The semi-floating axle is used on most passenger-car models with independent wheel thrust provision. Wheel bearing adjustments are often made by means of shims.

Faster axle ratios are found where larger engines or smaller tires are used. In some of the heavier models the ratios have been increased to provide greater flexibility. Because of varied conditions throughout the country other than standard axle ratios are offered as special equipment. Tubular side members, bolted to a central housing, have been reintroduced. Case hardened truck axle shafts are of interest. The block type differential mounting is new.

BRAKES

Internal Brakes predominate. Four wheel brakes are universal in the passenger-car field, with trucks and buses turning to it. Aluminum internal shoes, because of their greater expansion coefficient, compensate for the greater temperature rise of the steel drums. Chucking the assembled wheel and drum, the latter is ground to size to insure concentricity with the hub bore. Enclosed steel cable actuation, between frame and axle, has been introduced. Cadmium-plated parts are rust proof.

Copper lines in hydraulic systems are sheathed in a steel wire covering for protection and are isolated from all heat. The actuating cylinder and supply tank are combined in one unit, with automatic compensation for any expansion or contraction of the liquid following temperature changes or leakage.

More sensitive vacuum operated brakes are made possible by placing a re-designed valve independently in the brake rod line. A cylinder unit, pivotally suspended from a cross shaft, with the piston connected to another shaft, gives perfect equalization there between, the cross shafts being connected to front and rear brakes. For road train or trailer use, a valve unit is placed adjacent to the operating cylinders, whereby air is admitted directly to each one. The drag of an electrically magnetized plate alongside the brake drum flange acts as a servo for the brake within.

Types.—"Throw-away" shoes, which are scrapped when worn out, are used in buses. With asbestos lining, close-grained cast-iron drums have been the

most effective, being free from scaling and expanding less when heated than the usual pressed steel drum. Slack-adjusters automatically take up excessive rod movement. Heavy truck axles have straddled mounted anchor pins. Dust plates are being fitted. A brake mounted on the front end of the worm shaft is popular.

Legislation.—No doubt brake legislation will soon be enacted, now that scientific apparatus has been developed for test-stand use. An electric-motor-driven transmission dynamometer measures the braking effort at each braked wheel. Another apparatus consists of wheel-rotated fly-wheels possessing the same kinetic energy as the vehicle would have at a selected speed, and noting the deceleration at each wheel from brake application to rest.

AXLES AND TIRES

Front Axle.—The reversed Elliot type predominates. Chromium-plated knuckle pins, larger diameter taper joints on the steering knuckle arms for increased rigidity and anti-friction knuckle bearings, top and bottom, for ease of steering are noted. A new tie rod has eccentric or wedge-shaped half-cups, held against the ball stud by a U-spring. Reduction in the steering-spindle angle, particularly on buses, aims to reduce tire tread wear.

Wheels, Rims, Tires.—Interchangeable wood, steel disc and wire wheels on the same hub equipment is a new development. As one shimmy preventative, wheels are balanced before and after mounting tires. Tire and tube assemblies, as original equipment, are marked for proper valve location to insure balance when mounted. Provision is made for balancing of wheels in service by the addition or removal of washers, in groups around the felloe. One-piece forged steel wheels of flat spoke construction and a cast-steel wheel with ventilating spokes mounting the rim or rims directly at the spoke ends have been brought out for heavy duty pneumatic tires.

Cushion tires for light trucks have been popular enough to bring about standardized demountable mountings. A 28" x 14" heavy duty trailer

wheel has been developed, having a carrying capacity of 10,200 pounds.

SPRINGS AND FRAME

Suspension.—Negative cambered front springs are used to obtain low body heights. Rear springs are longer, 60" in one instance. Devices have been developed to give increased, constant interleaf friction. Springs are carefully graded according to each body model. Ball-bearing shackles and those of the rubber bushing-type have been introduced. The rubber block-type of mounting has been extended to amidship transmissions, gasoline tanks and truck cabs.

Frame.—Frame side rails are stronger by use of a deeper web and wider flanges, or in one case wider flanges with a rolled-over lower flange. Gusset plates are being eliminated by widening the ends of the cross member flanges. A reinforcement in the front end of each side rail assures rigidity at this point, as a prerequisite against shimmy and is a more logical stiffening means than by tying-in the crankcase at four points.

Control.—The standard gear-shift is now universal. Higher steering reductions reaching 18-1 are used. Adjustable steering columns use toothed interlocking brackets on column and dash. To reduce road shock, one maker provides a resilient connection in the steering gear arm. Another uses a slightly resilient steering wheel rim of steel-reinforced molded rubber.

EQUIPMENT

Accessories are built with special reference to their appearance when incorporated with particular car designs. Bumpers, for instance, blend with body line and are ornamented with the key color. Two-toned instrument board to correspond with the external colors and instrument panels of satin-finish nickel, and engine-turned metal or hammered silver are recent developments.

Lights.—A new lamp with wide beam-spread requires no bulb-focusing adjustment. A non-symmetrical system of headlight distribution is favored in which the high intensity

of the beam is directed to the right of the car axis. Bullet-type headlamps are popular. Individual vertical nickeled stanchions, often with a monogrammed tie rod between, are replacing the fender mounting. Cowl lights are bracketed on a wide nickeled band around the front of the cowl. More spare tires are mounted at the side in fender wells. An ignition lock, with a steel-coiled casing extending to the distributor and grounding the latter in the "off" position, is widely used. An ignition lock incorporated in the steering-gear lock is also popular.

Details.—Pressure-gun lubricating fittings are grouped together at accessible points. Some central lubricating systems use a semi-liquid grease instead of engine oil. A gasoline gage on the tank as well as the dash is convenient. Windshield wipers return to the "off" position, no matter where stopped. The full-across type is gaining ground. Chromium plating is used on radiator shells and caps, hood latches and hinges, lamps, open-car windshield arms, door handles, bumpers and exhaust manifolds.

BODIES

Fenders and Hoods.—Fenders have more sweeping lines, with a prominently beaded edge. Hoods show a variety of louvres; horizontal, narrow vertical, angular and grouped. Sometimes they are replaced by rectangular doors. Narrow and high radiators predominate, depth often being obtained by a false bottom around the starting crank cap. Artistic filler caps are set close to the shell, merging into the hood hinge which at the cowl blends into a socket decoration or a raised cowl panel. Running-board trim hides screw and nail heads.

Design.—Low appearance, good proportions by streamlining and balanced body design, harmonious exterior coloring and comfortable seating summarize the new bodies. "Cheat lines" are employed to deceive the eye and carry the vision along extended horizontal lines to increase the apparent length. Door openings are flush and barely noticeable to obliterate vertical lines. Along the

sill a broad molding painted in contrasting color is carried back and around the fender. Moldings and reveals around the windows tie them together in a long, shallow group. Crowned roofs, dropping the roof at the rear corner and deep door-heads express lowness. Belts in color, shape and location do likewise. The cadet-cap visor, door-panel color inserts or raised oval medallions, decreased depth of the panel over the top of the windshield for greater visibility, and carrying a distinctive mark through the fenders, lamps, radiator cap, door handles, instrument board and garnishing moldings are popular.

Seats.—Adjustable front seats, arm rests for the rear seats, adjustable foot rests, metal hand grips and form-fitting seats with saddle-spring cushions assure comfort. While harmonizing with the exterior, contrasting colors are used inside the body, the wall-covering, ceiling and carpet differing from the seats.

Open Cars.—There is a reversion to open bodies of distinctive appearance. Windshields fold horizontally forward. The convertible coupe and sedan aim to give open and closed car advantages at will. Coupe and roadster models are sometimes provided with a sliding door in the rear deck, adapting them to commercial use or a slip-on compartment is provided, inserted after removing the deck cover. Another commercial adaptation is a closed body with a concealed wide door at the rear and provided with a detachable seat and trim in the rear compartment.

TRUCKS AND BUSES

Trucks.—Better weight distribution, lessened road impacts and increased traction has brought the six-wheel vehicle, with two rear-driving axles, to the fore. A dead rear axle behind the driving one is sometimes used. Six-cylinder engines, high operating speeds for the heavier trucks through the use of dual pneumatic tires and four-wheel brakes, four-speed transmissions on light trucks, an additional high speed reverse, improved cab and body mountings, enhanced appearance and greater use

of the trailer and semi-trailer are distinct trends. Several house-to-house delivery vehicles have been developed with dual controls, operable from either side.

Buses with side or rear engine mounting instead of the conventional have made all the floor space available for seating. Large engines are used to keep down engine speeds as a factor for long life. Refined units allow larger mileage between overhauls. An emergency window above the rear cross seat is operable under all conditions. Duralumin bodies are in production. The parlor observation coach, with an upper rear level, affords maximum vision and solves the baggage storage problem. The coordination of the bus with railroads, electric railways, boats and even airplanes marks its acceptance in the general transportation scheme.

INDUSTRIAL DEVELOPMENT

Manufacturing.—The increased use of standard tools with special fixtures, air-operated fixtures, hydraulic feeds, the standard spindle nose for milling machines, gear-finishing machines and inspection devices, small diameter internal grinding, external cylindrical honing and diamond boring of crankshaft and connecting rod bearings are developments in the machine tool industry. Die rolled I-beam axles, axle and transmission shafts, upset forgings and centrifugally-cast worm gear blanks give reduced production costs with superior quality. Improved metallographic equipment has been developed and the X-ray is being used for inspection. Improved material handling methods start with freight car unloading and go through foundry, machining, heat-treating and assembly operations.

Research.—The electro-deposition of rubber, ultraviolet spectroscopy of engine fuel flames, stroboscopic study of valve-spring surge and an accelerometer-testing apparatus with a rotating weight method for obtaining harmonic motion are major developments of the year. Of interest are anti-knock fuel tests, fuel requirements for various phases of engine performance, effect of engine carbon on detonation and corrosion caused

by anti-freeze solution. Chromium plating is being experimented with on crankshafts and sleeve-valve engine sleeves. Brake drum heat in dual wheels, spring-leaf stress measurements by means of a strain gage and the torsional strength of multi-splined shafts have all been investigated.

Automotive Influence.—The machine tool industry is largely equipping its wares with anti-friction bearings, central lubricating systems and

automotive alloy steels. Railroad coaches are equipped with anti-friction bearings. Trolley cars simulate bus practice in windshields, windows, seats, flooring, bumpers and general appearance and color. Worm-drive axles, propeller-shaft drive, internal expanding brakes, semi-elliptic springs, rubber block mounting and pressed steel frames are incorporated in the trucks. Vacuum boosters are used to actuate motor boat reverse gears.

NAVAL ARCHITECTURE AND MARINE ENGINEERING

BY JOHN K. ROBISON

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IMPORTANCE OF MERCHANT MARINE

Competition.—Naval Architecture and Marine Engineering in the United States continue to suffer the fate of any unprotected industry forced to compete with rivals whose protection is complete. Until the nation realizes the vital importance of an American Merchant Marine to its very independence as well as to its economic welfare, there seems to be little hope of very great change from the present conditions. Frankly, the American flag is disappearing from the seven seas of commerce.

Carrying Trade.—Our foreign trade exceeds that of any other nation. Having carried about half of it six years ago, we now carry less than a third of it in American bottoms. The wage rates of Americans are so much higher than in those countries that to build and operate successful ocean-going vessels, we have initial costs, and operating costs as well, which forbid success in competition with those not enjoying American living standards. We lose no little control of our own destiny when we are forced to depend upon foreign interests to decide whether or not our foreign trade is to be carried. Until we have found the elements that control the trade routes of the world, the tendency to let other nations gain our carrying trade seems likely to go unchecked by adequate aid to our own merchant marine.

There are times when American

trade suffers severely from lack of American vessels. When foreign interests urgently need coal transport, American interests, as a year ago, may require the movement of cotton and grain. When only foreign vessels are available, it is not possible to assure prompt delivery in foreign ports of American products; such as an American locomotive to be delivered in Calcutta for instance. Nothing but availability of American bottoms make it impossible for an embargo to be put on any particular American trade by foreign interests. There is close cooperation among foreign banking, manufacturing and shipping interests.

Freights and Charges.—Regularly established lines from our own ports running to all destinations, make freights lower and decrease charges for insurance. Until our own merchant marine is large enough, foreign vessels will continue to be operated to the interest of foreign owners. Trans-shipment of American freight in some foreign ports will often be necessary to make delivery in China, India, Australia, or wherever the ultimate destination may be. This load on American trade is great. Doubtless we will continue to carry it while our general prosperity remains high; feeling only in times of great stress that the burden is really heavy.

The people of the United States measure their direct loss in foreign freight payments as in the order of

\$400,000,000 a year. They shrug their shoulders, admit this is a stiff figure, and go on about their business without ever considering the indirect charges American trade pays in the form of insurance, brokerage and lost trade. Americans will have to awaken to the vital importance of the marine before the annual chronicle of maritime achievements can be much more than a doleful account of foreign progress and of American obsolescence.

Economic Failure.—This work that through neglect of our own best interests we resign to other peoples is of a high class. The design and building of a great ship involves more of the highest constructive ability than any other single human achievement. Operation and management of such a vessel is not common labor but skilled work. A line of vessels requires the same order of skill to operate it as does a railroad. It is a fine American-like work that we are leaving to foreigners to do for us, while, like the Chinese, we attend to our coastwise, lake and river traffic. Time, neglect and disuse are destroying this industry and riveting shackles on our foreign trade that may be found to be unbearable in a near future. This is no place for a polemic, but it is fitting to remark that the sole cause of our failure on the ocean is an economic one. When given opportunity we rapidly created a great ocean-going American fleet after 1917. We still build few but fine vessels for our own inter-coastal trade and for our strictly coastwise work as well. On the Great Lakes, we have met special conditions with new designs and our water-borne trade there is distinctly successful.

SHIPBUILDING AND TRANSPORT

Passing of Cramps.—Ships must be built if we are to have them. Naval architects require experience to attain competence. Shipbuilding is as unique an art as bridge building. Marine insurance and brokerage require continuous practice for competence as much as do navigation and piloting. We record the passage of any essential element of a merchant

marine with real grief. In the United States, the outstanding feature of Naval Architecture and Marine Engineering during the last year was the passage from the active scene of Wm. Cramps and Sons.* Long this firm led a losing fight for American ships on the sea. Now, they admit failure and restrict their future activities to shore plants. Taken with the death of other shipbuilding institutions or their passage to other work, it is with genuine sadness that our chronicle is started with this item of necrology.

Cargo Values.—The total water-borne trade of the United States was in excess of a half-billion tons in 1926. Cargoes were valued at over twenty-five billion dollars, about forty per cent of the entire rail traffic of this country. The cheapest transport is by water and our water-borne trade continues to increase, not only in quantity, but in proportion to our entire trade. Good roads and the coming of motor transport make the unwillingness of railroads to arrange for interchange of freight with vessels through equitable division of freight-rates and adequate connecting terminals a matter of decreasing importance. At the present, it may soon be the railroads that seek the connection with inland water routes, and this condition is bound to bring about a rapid growth in ocean as well as in river and lake transportation.

Cargo Volume.—As yet, bulk cargo furnishes most of our floated freight. Our water-borne freight in 1926, included:—coal, 128; petroleum, 123; iron ore, 68; sand and gravel, 50; lumber and logs, 45; stone, 23; grain, 21; sugar, 8; fertilizer, 6; iron and steel, 4; cotton, 3; cement, 2. The amounts given are in millions of tons carried. Other products carried by water are in hundreds of thousands of tons:—flour, 28; copper, 26; sulphur, 21; pulp-wood and pulp, 34; syrup and molasses, 18; asphalt, 14; marine products, 10; hay and feed, 5; rice, 4; with over thirty-six million tons of miscellaneous cargo. We imported fifty million tons; exported eighty million tons; carried one hundred and eighty million tons coast-

wise; one hundred and sixteen million tons on the Great Lakes, and two hundred and seventeen million tons on our rivers and canals. This condensed list shows how greatly water-borne traffic affects our people, be they in city or country.

Financial.—Ocean-borne commerce of our country is increasing. American shipping is decreasing. A foreign operator desiring a new ship can borrow most of the money for its building at rates ranging from two to four per cent. In this country there is a limited amount obtainable through the Shipping Board at 4¼ per cent. New vessels cost about twice as much if built in America as if built in Europe. Naturally only special conditions have justified building ships in American yards for foreign trade. Our work is practically restricted to the needs of our intercoastal and coast-wise trade.

ENGINES AND FUEL

The Diesel engine because of its low fuel consumption has been very attractive to ship-owners. More than a third of all vessels under construction are to be fitted with machinery of this type. Particularly is this true in foreign yards where, with a larger market, there is more experience available than in this country. Practically all American-built Diesel machinery is an adaptation to American practice of some European design. The American engine costs much more than the one built abroad. Perhaps American fuel costs average a shade lower, or it may be the pocket nerve here is more sensitive to overall costs. At any rate recent American progress is more closely directed to the incorporation in marine practice of advanced shore power-plant design. We have not neglected Diesel engine development. The Shipping Board has led in this work, and at the end of the year has practically completed the substitution of economical Diesel engines for uneconomical steam machinery on a dozen freighters.

The results available show the expected economies in amount of fuel used but are not so conclusive as regards gross operating costs. The

reliability is reported as very good indeed. There are no savings in personnel charges. Thus far the high unit cost of Diesel fuel has partly counteracted the decrease in fuel consumption and with reasonable allowance for interest, insurance and depreciation, most services show no very great improvement. This condition may change as we build more Diesel engines, gain experience in their manufacture and operations, and improve the power output per dollar or per unit of weight or space.

We lag behind the latest European practice in this line about 20 per cent; in other words, although American builders are ready to undertake to duplicate the best recorded performance of Europeans, the actual product of foreign yards is more powerful, lighter, less bulky, and of course, less expensive than the product of American yards. Naturally, we hold this condition to be temporary. A similar condition regarding steel plates and shapes existed in the 80s. When we required a quantity of first class work we got it. Today our steel products are fully equal to any. This condition has been attributed by such an authority as Andrew Carnegie to the requirements of Naval specifications. Thus this temporary backward condition in American Diesel machinery will last only until the American people feel the need of an American merchant marine and pay the price to get it.

Application of Power-House Methods.—The adaptation of power-house methods to marine use is having a real vogue in what is left of our merchant marine. On the Great Lakes the *Bradley* is equipped with automatic stokers and air-heaters. This vessel is giving superior economy and good reliability. The Morgan line of the Southern Pacific R.R. has built the *Dixie* with 375 lbs. pressure, high superheat and air heaters. This vessel uses oil fuel. The *Mercer*, a Shipping Board freighter, is successfully using pulverized coal and other vessels are to be similarly equipped. The *Virginia*, a sister vessel of the *California*, a fine fast passenger vessel built for the International Mercantile Marine for the New York to

California run has been laid down and it is reported that a third ship is to follow. These vessels have the so-called power-house drive by electric motors. They use superheated steam and the Virginia is to have the really high total temperature of 700° F.

In this form of drive the electricity is generated by high speed steam turbines and it is expected that the smoothness of operation, without vibration, the low maintenance costs, and the high reliability of this type of machinery, may make these ships mark a real step in advance. For smaller powers the electric drive is being planned for three freighters for the Shipping Board. In these cases the electricity is generated by high speed Diesel engines. The comparison between this Diesel-electric operation and the available steam-electric drive is rendered difficult by the great cost of concurrent work undertaken to increase the speed of the vessels on which the Diesel electrification is to be undertaken. In itself, this plan to change the underwater form of a ship is a very interesting step, though not without precedent. This undertaking is a genuine development that when completed should furnish data as to high speed engine costs that will aid us in the future. It will be compared with geared drive from high speed Diesel machinery direct to the propeller shaft that has been tried here and that is the proposal drive of a new Hamburg-American liner.

River Traffic Cost.—The great river traffic is being carried in barges pushed by tow-boats with old style machinery. Real advance in design is under way here. Diesel engines, pulverized coal, higher pressures and condensing engines are all being tried to secure a drop in the ton-mile cost.

GENERAL

Most naval architects in America, who have not engaged in other professions are jobless. Some are buying yachts in Europe, freighting them in considerable numbers to Halifax, and entering them to U. S. waters under their own power from Canada. These boats compete, duty-free, with the few American built boats that are left. There are those that call the purchase of cheap foreign built boats unpatriotic, others say it is senseless to attempt to rescue an industry that is moribund.

Inventions.—There is a flood of new devices for ship use. Old-time engineers are becoming inventors. It seems unnecessary to mention the devices in detail. They range from the successful gyro-compass steering device to lubricators, including such details as radio, depth recorders, signalling devices, towing engines, pumps, etc. One sees that American marine ingenuity is not dead nor is the desire for service. From the deep sea in which it is slowly sinking the American Merchant Marine calls for aid.

COMMERCIAL MARINE ENGINEERING

By A. H. JANSSON

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THE MERCHANT FLEET

Relative Size.—Next to Great Britain the United States now possesses by far a larger merchant fleet than any other maritime nation. In 1914 the merchant fleet of the United States ranked third; the fleet of Germany as well as Great Britain at that time being larger. The relative standing of the principal nations of the world in the percentage of ownership of steam and motor tonnage

in the years 1914 and 1927, taken from a compilation made by Lloyd's *Register of Shipping*, is as follows:

	1914	1927
Great Britain and Ireland....	41.6	30.3
United States	9.4	21.6
Japan	3.8	6.4
Italy	3.1	5.4
France	4.2	5.3
Germany	11.5	5.2
Norway	4.3	4.4
Holland	3.2	4.2
All other nations.....	19.1	17.2

COMMERCIAL MARINE ENGINEERING

Machinery.—Another compilation from the same source indicates the type of machinery in existing merchant vessels of the world as compared with 1914, by the percentage of the total gross tonnage in which coal and oil fuel are used.

	1914	1927
Sailing vessels and seagoing barges	8.06	2.95
Oil, etc., in internal combustion engines	0.45	6.55
Oil fuel for boilers	2.65	28.35
Coal	88.84	62.15
	100.00	100.00

Oil Tankers.—In oil tankers of 1,000 gross tons and upward the United States ranks first among all the nations of the world. Of this classification there is in the world at present 1,050 of 5,847,000 gross tons; 374 of 2,293,539 tons being reg-

istered in the United States and 352 of 1,934,186 tons registered in Great Britain and Ireland.

Relative Tonnage.—The relative position at the present time of the principal maritime countries in the ownership of all tonnage and of larger ocean-going vessels suitable for general cargo and passenger service is shown in the accompanying table compiled by Lloyd's *Register*. From that portion of the table designated as ocean-going tonnage, has been excluded all oil tankers, trawlers and other fishing vessels, tugs and salvage vessels, steam barges, dredges, ferries, river vessels and vessels owned by municipal corporations and harbor authorities, vessels on the Great Lakes, wood vessels, vessels of less than 5,000 gross tons and vessels over 25 years old.

Countries	Total Steam and Motor Tonnage 100 Gross Tons and Upward		Ocean-Going Tonnage as Defined Above	
	Tonnage Owned	Percentage of World Total	Tonnage Owned	Percentage of World Total
Great Britain and Ireland.....	19,179,029	30.31	9,343,033	37.72
United States	13,690,948	21.64	5,495,100	22.18
Italy	3,395,522	5.37	1,680,890	6.79
Germany	3,320,492	5.25	1,528,742	6.17
France	3,361,679	5.31	1,506,158	6.08
Japan	4,033,304	6.37	1,496,549	6.04
Holland	2,645,025	4.18	1,410,722	5.69
Norway	2,802,552	4.43	480,712	1.90
Other countries or country not stated	10,838,751	17.14	1,829,048	7.43
	63,267,302	100.00	24,770,954	100.00

POSITION OF UNITED STATES

Merchant Building.—The apparent strong position of the United States, the most populous and the richest of all nations listed and the one with the longest sea frontier, is of course due, first to the tremendous building of merchant tonnage during the war when something over 9,000,000 tons were added and, second to a considerable coastal and intercoastal sea traffic. The possibilities for future growth of sea-borne commerce in this category are tremendous and are limited only by the expansion of industry, agriculture and trade, as population and wealth of the country increases.

Trend of Overseas Trade.—But in a real sense the apparent position of strength of the American Merchant Marine is fictitious. By far the greatest part of this ocean-going fleet is owned by the Government and is laid up, gradually deteriorating in idleness. In overseas trade we will continue to slowly but surely fall back to our position of impotence before the war unless proper encouragement is given to private operators through an immediately effective and far-seeing governmental policy. There is hopefulness of a growing ship-mindedness of the people of America and that this will be reflected in the attitude of the Seventieth Congress in

giving earnest and serious attention to this problem. In 1914 only 9.7 per cent of our imports and exports were carried in American bottoms. During the war, when the nations on whom we had up to this time always depended for carrying our goods had more important business elsewhere, we built up a great fleet of our own and in 1920 carried 42.7 per cent (the high peak) in our own ships. In 1927 we had dropped back to 24.85 per cent and it seems certain that the percentage carried in American ships is bound to continue to decline unless a wise policy of encouraging our merchant marine is adopted and carried through.

SHIPBUILDING

Cramp & Sons.—Shipbuilding in the United States is at low ebb, particularly so due to the lack of naval work following the Washington disarmament treaty. All of the mushroom shipyards of the war period have disappeared and there has been a definite contraction of shipbuilding facilities in the case of several old yards. One of the oldest and most famous shipyards of the country, Wm. Cramp and Sons Ship & Engine Building Co., has definitely abandoned shipbuilding this year after completing two fine vessels, the *Yarmouth* and *Evangeline* for the Boston-Nova Scotia run, and the largest and most elaborate American passenger and cargo vessel up to the present time in the United States, the S.S. *Malolo*, for the Matson Navigation Co. for service between San Francisco and Honolulu.

Engineering.—In spite of the comparatively poor condition of shipbuilding in the United States during 1927 the development along certain lines of marine engineering has been steadily advanced. More than ever has there been an attempt to make full use of such facilities as exist for the scientific determination of the most efficient form and proportions of hulls and propellers. Hardly a vessel of any size is now laid down without a complete model test to predetermine accurately the power required for the desired speed and to determine the practicability of the conditions im-

posed by the service intended. Such model tests of hulls and propellers have saved power or increased speed by pointing the way to the correct design without sacrifice of any practical feature.

INVENTIONS AND EXPERIMENTS

Contra Propeller.—A number of notable foreign inventions intended to improve efficiency have been experimentally and practically tried out. Among these may be mentioned the contra propeller for increasing speed or reducing power at the same speed by the introduction of stationary blades or vanes in the vicinity of the stern port in such a manner as to minimize the losses due to the rotary motion of the water set up by the propeller and to provide an easier streamline flow of water to the propeller. In this connection the shape of the rudder section has also been modified to resemble the efficient airplane wing section reducing resistance.

Complete trials with and without this device were carried out at the model basin at Washington particularly in connection with its adoption for six coast guard cutters now building. The gain varying with the speed was found to be considerable and its adoption on these vessels was ordered.

Flettner Rudder.—The Navy, always a pioneer is experimenting in a practical manner to develop improvements in ship design, carried through a complete full-sized test of the Flettner rudder on the destroyer *Converse*. This rudder consists of a pilot rudder of small area hinged toward the after port of the main rudder. The small pilot rudder may be moved to any position desired with very little power as it is balanced and of small area. The movement of the main rudder which is free to swing is accomplished by the force of the water, through which the vessel is moving against the small pilot rudder. The pilot rudder, in other words, steers the main rudder as the main rudder steers the ship. It is claimed that there is a saving in power for steering and that steering can be done with little or no deviation from the course set.

Diesel Drive.—For river-craft Diesel and Diesel electric machinery is being more widely used. The saving in fuel is large, not only because of the thermal efficiency of the Diesel, but because of the inefficient type of steam machinery generally used. A new and highly efficient steam engine for this service, developed by a company of high engineering repute, has been successfully installed in three upper Mississippi river boats.

Sea Trials.—The Shipping Board's original program of converting 12 existing 9,000-ton deadweight steam freighters to Diesel drive is now nearly completed. The eleventh vessel of this type, the *West Grama*, had successful sea trials during December. There now remains only the *Willscow*, which is to have her trials early in 1928. With the *Seminole*, which passed successful sea trials Oct. 29, the two vessels mentioned have all been fitted with double-acting Diesel engines of approximately 3,800 horsepower each. These engines are the first of their type built by American concerns and represent an important development in the marine Diesel-engine art in this country. Successful results attained in the Board's initial conversion program was followed by an order to each of four of the engine builders who participated in the original work for two additional engines or a total of eight engines of somewhat greater power. These engines are to replace the steam machinery in eight existing freighters. The speed will be increased somewhat as the power called for is greater than for any of the first twelve engines.

As speed in cargo liners is steadily increasing the Shipping Board after a thorough investigation decided toward the end of the year to order the conversion of three steamships to Diesel electric drive. The vessels chosen were the *Courageous*, *Defiance* and *Triumph*. They are 468 feet 6 inches long overall and have a displacement of 15,100 tons on a draft of 27 feet 4 inches. A speed of 13½ to 14 knots is expected. The complete cost of conversion including the Diesel engines, of which there are to be four, and of the electrical machinery varied

from \$1,192,000 to \$1,319,000 for each vessel.

GREAT LAKES VESSELS

On the Great Lakes two notable vessels were laid down and completed during 1927. The first of these is the self-unloading steamer, *Carl D. Bradley*. She has the distinction of being the longest vessel ever built on the Great Lakes, her length overall being 638 feet; length between perpendiculars 615 feet; breadth molded, 65 feet and depth molded 33 feet. Her propulsive power consists of a steam turbine generating set supplying current to a motor directly connected to the propeller. Electric current generated by the main unit or an auxiliary unit is also used in unloading the vessel. A cargo of over 15,600 short tons of limestone has been unloaded by this vessel in five hours. This vessel represents the latest design in the remarkable progress made in the development of bulk cargo carriers on the Great Lakes.

The second vessel is particularly notable in two respects: first, her tremendous size. This is the steamer *Harry Coulby*. Her length overall is 630 feet 9 inches. She has a beam of 65 feet and a depth of 33 feet. Displacement on a twenty-foot draft is 21,380 short tons. She has a deadweight capacity in long tons at 20-foot draft of 14,000. Besides her large size another interesting feature about this steamer is the exceptionally fine guest passenger accommodations with which she is fitted.

OCEAN VESSELS

Malolo.—In large passenger vessels the past year is outstanding in the annals of American shipbuilding. The *Malolo*, a large, fast, luxurious ocean-going passenger ship for the Matson Navigating Co. passed successfully her sea trials and is now in commission. Her dimensions are: length overall, 582 feet; molded breadth, 83 feet; depth molded to sea deck, 54 feet; draft loaded, 28 feet 6 inches; displacement at this draft, 19,560 tons; gross tonnage, 17,200. The *Malolo* has a capacity for 650 first-class passengers and a deadweight capacity of 5,500 tons at 26

feet draft. Her propulsive machinery consists of two Parson's-type geared turbines as built by William Cramp & Sons. Each turbine driving a single shaft develops 12,500 horsepower. The speed is $21\frac{1}{2}$ knots. There are twelve water-tube marine type boilers and oil is burned for fuel.

Perhaps no other ship has been more carefully designed to meet, even to surpass, the recommendations of the London convention for safety of life at sea. There are no less than twelve bulkheads all extending up to twenty feet above the water line. Watertight bulkhead doors are operated hydraulically from the bridge. Any five compartments of this vessel may be flooded, and if the engine compartment is not among them the ship will be able to reach port under her own power. In her passenger accommodations and the taste and refinement of decorations the *Malolo* is undoubtedly the equal of the finest liners afloat today. This vessel has now entered on her regular service between San Francisco and Honolulu, a distance which she makes in less than four days.

California.—The other fine large passenger ship, the *California*, is nearing completion and is somewhat larger than the *Malolo*. Her length overall is 601 feet 3 inches; her breadth molded is 80 feet; her depth molded is 52 feet and the load draft is 32 feet 3 inches. Her gross registered tonnage is approximately 20,400. Her cargo capacity is 7,800 tons and there are passenger accommodations for 384 first class and 363 intermediate class. Her average sea speed will be 18 knots. This vessel, which is to enter service Jan. 15, has the distinction of being the first large merchant vessel to have turbine electric machinery for motive power. The total shaft horsepower in a twin screw installation is to be 17,000 at 120 revolutions per minute. There are two main generators and two direct current propulsion motors each direct connected to a propeller. The motors are of double armature type and each develops 8,500 shaft horsepower. Each generator will be of 5,250-6,600 kilowatts with exciters of 500 kilowatts. Steam is furnished to

the main turbine generators by 12 watertube marine boilers. This vessel with unsurpassing beauty and comfort in passenger accommodations which have been designed in American period style is to enter service between New York and California ports via the Panama Canal. In every respect as a shipbuilding job, except as to size, she is the equal of the finest product of any shipyard in the world.

Gulfpride.—America has the distinction of having turned out during 1927 the largest Diesel-engined tanker, the twin screw motorship *Gulfpride*, of 12,510 gross tons. This vessel, built on the Isherwood bracketless system of hull construction, is also the largest vessel so far built on this system in the world. She has a deadweight tonnage of 17,400 at load draft of 28 feet. Her displacement is 21,480 tons. Her cargo capacity is 16,700 tons. Two four cylinder, two cycle, single acting Diesel engines each direct connected to a propeller shaft and each developing 2,100 shaft horsepower constitute the propulsive power. Auxiliary power is furnished by three Diesel engines, each of 150 brake horsepower direct connected to 100 kilowatt electric generators. The *Gulfpride* is in every respect a modern tanker and represents the best in design and construction for her type in American shipbuilding.

PULVERIZED COAL BURNERS

Undoubtedly the most important development in marine engineering during the past year is the fine result obtained in the practical installation of pulverized coal burners on the *Mercer*. This installation was made at the Maryland Drydock Co. plant, Baltimore, under the supervision of the Shipping Board's committee on fuel conservation. The practical installation on the *Mercer* was made only after many months of experimental work carried out principally at the fuel-testing station, Philadelphia Navy Yard. These tests were so successful that it was considered entirely feasible to make a large ship installation. The *Mercer* sailed from Philadelphia for Rotter-

dam towards the end of November. Reports indicate that the pulverized coal burning system has operated with success, and that the fuel consumption per day in tons of coal is about equal to this same ship's fuel consumption as an oil burner in tons of oil, which means of course a large saving.

ESSENTIALS FOR THE FUTURE

It is therefore quite apparent that in spite of serious depression that the art of shipbuilding and marine engineering is for the time being holding its own. It is certain, how-

ever, that unless the requirements for shipbuilding increase that we shall gradually lose the skill and ability now possessed in certain limited quarters. The training of the naval architect and marine engineer and of the skilled shipbuilder is long and arduous and cannot be done at will in a short period of time. If we are to be prepared, it is necessary to do everything possible to encourage shipbuilding so that young men will be drawn to this work and will find in it adequate rewards. Shipbuilding skill is vital to the safety of the country and must not be allowed to lapse.

MATERIALS OF ENGINEERING AND CONSTRUCTION

By C. LAURENCE WARWICK

SECRETARY-TREASURER, AMERICAN SOCIETY FOR TESTING MATERIALS

GENERAL DEVELOPMENTS

Materials and Trends.—A steady development in the field of engineering materials is to be noted for 1927. The demand for materials of special properties to meet the increasingly severe requirements of modern industrial conditions, noted in *THE AMERICAN YEAR BOOK*, 1926, has continued as an outstanding feature, and has been an important factor in the support of research in materials. The trend of industrial development in these recent years of keen competition, both within a given industry and between rival industries—the latter often referred to as “the new competition”—has been toward lower commodity prices at an unchanged wage level and therefore smaller margins of profit and greater turnover. These conditions place a high premium upon the application in industrial management of the principles of simplified practice and standardization of materials and upon the utilization of the most up-to-date information about the properties of materials and their adaptability to new conditions of service. The progressive and successful organizations in industry today are realizing the significance of these developments.

Amsterdam Congress.—An outstanding happening was the holding of an International Congress for Testing Materials in Amsterdam, September, 1927—the first since the 1912 meeting of the International Association for Testing Materials, which was disbanded after the World War. Technologists from twenty countries gathered to present and discuss a record of progress in the study of properties and tests of materials, and so successful was the outcome that it was determined to organize a New International Association, the preliminary steps for which are practically completed. The resumption of international relations and the resultant cooperative effort in this field is being welcomed by engineers the world over and will undoubtedly influence developments in engineering materials in the years to come, especially, it is believed, in the international standardization of methods of test.

METALS

Corrosion.—A study conducted by the National Bureau of Standards of corrosion of pipes embedded in typical soils throughout the country includes 20 kinds of iron and steel pipe, 24 of non-ferrous metals, 17

varieties of non-metallic protective coatings and 6 weights of galvanized coatings. The results to date are reported by K. H. Logan (Am. Foundrymen's Assoc., *Transactions*, 1927) and indicate the importance of soil chemistry and soil physics upon the corrosive-resistant properties of the pipe. They show that the type of corrosion is associated with locality; that rate of corrosion in some soils is very small and in some is almost negligible; and that corrosion decreases with time and the penetration of the pipe wall decreases more rapidly. It is too soon to draw conclusions, due to the entrance of new influences as the tests are continued, and to the large differences in corrosion of different specimens of the same material under nominally similar conditions.

Soil corrosion is of especial importance to the petroleum industry, with its thousands of miles of underground pipe lines, and a paper presented at a Corrosion Symposium before the American Institute of Mining and Metallurgical Engineers (*Transactions*, 1927) brought out the need for a cheap corrosive-resistant pipe, possibly a pipe with a resistant outer shell or a factory-applied coating. Other papers discussed the effect of oil upon corrosion in the presence of water, the corrosive effect of sulfur and sulfur compounds in petroleum, corrosion in pumping equipment and the use of ammonia as a means of arresting corrosion.

Field and laboratory tests of metallic coatings by the Committee on Corrosion (Am. Soc. Testing Mats., *Proceedings*, vol. 27, I, 1927) have progressed rapidly during the year. The installation of the zinc-coated sheets at five localities—Brunot Island, Ohio; Altoona, Pa.; Pennsylvania State College; Fort Hancock, Sandy Hook, N. J.; U. S. Naval Station, Key West, Fla.—has been completed and first inspections made. As might be anticipated, none of the sheets has failed, the coatings in all cases being predominately metallic zinc. The bend specimens were inspected at all locations; however, sufficient data are not available for any specific conclusions other than

the generally accepted one that, other conditions being the same, flaking is more pronounced as the weight of coating increases. At these same locations are being installed zinc-coated wire and fencing, various types of metallic-coated hardware and structural shapes. Careful observations of their behavior under the widely varying atmospheric conditions will be made over a period of years, thus establishing a valuable rating of their relative resistance to corrosion. Accelerated laboratory corrosion tests of the same materials parallel these outdoor exposure tests.

Fatigue of Metals.—The effect of corrosion upon the fatigue strength of iron and steel was mentioned last year (see *THE AMERICAN YEAR BOOK*, 1926, p. 828) as an outstanding contribution by D. J. McAdam, Jr., to fatigue phenomena. The same investigator has continued his studies into the field of non-ferrous metals and discusses (Am. Soc. Testing Mats., *Proceedings*, vol. 27, II, 1927) corrosion-fatigue of nickel, copper, the nickel-copper alloy monel metal and certain aluminum alloys, particularly duralumin and aluminum-manganese alloy.

The fact that, for sheets and alloy steels, the corrosion-fatigue limit varies surprisingly little with composition and heat treatment, and the fact that by the addition of elements such as chromium and nickel there is an increase in the corrosion-fatigue limit, suggested the idea that for each metal and alloy there may be an intrinsic corrosion-fatigue limit depending on the corrosive agent and on the corrosion resistance of the material. This hypothesis received support when it was found that cold-working has practically no effect upon the corrosion-fatigue limit of the nickel-copper alloys, and that the corrosion-fatigue limit of duralumin was unaffected by heat treatment. Aluminum and the aluminum-manganese alloys are the only alloys yet encountered for which the corrosion-fatigue limit is considerably affected by cold working. This subject needs further investigation before definite conclusions are drawn. It seems possible that to explain the intrinsic corrosion-fatigue limit at-

tention must be directed to the space lattice and to inter-atomic attraction.

The complicated corrosion-fatigue graph is really made up of two graphs, a lower pure corrosion-fatigue graph and an upper graph whose course is influenced largely by some factor or factors of ordinary fatigue. The first impression given by this interrelationship is that the mechanism of corrosion-fatigue is entirely different from that of fatigue. The hypothesis that the distortion of the corrosion-fatigue graph is due largely to the thermal effects of ordinary fatigue has not yet been definitely established. More light may be thrown on this subject by experiments now under way at lower cycle frequency.

Studies of fatigue properties of cast iron by H. F. Moore and S. W. Lyon (Am. Soc. Testing Mats., *Proceedings*, vol. 27, II, 1927) show a fairly well marked but rather low endurance limit for each cast iron tested, the ratio of endurance limit to tensile strength being somewhat lower than is usually found for steel. The fatigue strength is markedly increased by oft-repeated stress below the endurance limit. Grooves in test specimens reduced the endurance limit only slightly—a rather interesting observation in view of the relative brittleness of cast iron. On tests of cast iron under cycles of reverse flexure at temperatures ranging from room temperature to 1400° F., no great reduction of endurance limit was found for temperatures below 800° F.; above 1200° F. the endurance limit was as high as the tensile strength under prolonged steady load. Endurance limits of specimens tested under direct cycles of stress were 1.48 times the limits under cycles of complete reversed flexural stress. Fatigue tests of carburized carbon, nickel and chrome-nickel steels (H. F. Moore and N. J. Alleman, Am. Soc. Steel Treating, *Transactions*, 1927) indicate that carburizing followed by heat treatment is an effective means of increasing the fatigue strength and also surface hardness. Steel quenched in oil from the carburizing pot showed greater increase in fatigue strength

than did steel cooled in the carburizing pot.

In a paper on "Fatigue Studies of Telephone Cable Sheath Alloys" (Am. Soc. Testing Mats., *Proceedings*, vol. 27, II, 1927), John R. Townsend describes the fatigue properties of lead sheath for telephone cables, the first recorded study of the fatigue strength of a very soft ductile metal. Fatigue failure of lead and antimony-lead alloy is found to occur by intergranular fracture. Vibration and bending tests based on performance of cable in service are described.

The constitution of metals is becoming better understood as scientists bring to their aid such tools as the X-ray (see under *Testing*) and high power metallography. F. F. Lucas (Int. Congress Testing Mats., *Proceedings*, 1927) has applied the ultra-violet microscope to the study of steel, lead and other metals, and by changes in the construction of the lenses in the objectives and by perfecting the preparation of test specimens, is able to get perfect photomicrographs with enlargements of 3,500 to 5,000 diameters. With such increases in resolving the microstructure of polished steel surfaces and with the additional knowledge gained by using the ultra-violet microscope, some of our conceptions of the structure of martensite and troostite may have to undergo revision. Studies of single crystals of copper and zinc and of the phenomena of hardening (Am. Inst. Mining and Metallurgical Engineers, *Transactions*, 1927) have widened our understanding of microstructure of metals and the laws governing the behavior of metals and their alloys when cold worked and subjected to various forms of heat treatment.

NON-METALS

Cement and Concrete.—No important developments have taken place in the production or utilization of cement. The use of high early strength cement is increasing. The studies of the fundamental constitution of portland cement (see THE AMERICAN YEAR BOOK, 1926, p. 830) are being continued at the National Bureau of Standards. Methods of

testing cement are being critically studied by the Committee on Cement (Am. Soc. Testing Mats., *Proceedings*, vol. 27, I, 1927). Compression tests of 2-in. cubes of fluid "neat" cement mixtures containing about 40 per cent of water by weight of cement, while still somewhat inconclusive from the standpoint of preference to the tension tests of standard mortar briquets, present an interesting possibility for a reliable 3-day test, which would be of considerable value to the testing engineer in speeding up the commercial acceptance of cement.

The design of concrete mixtures, especially methods of proportioning cement, aggregate and water, and methods of field control of the quality of concrete, continue to engage the principal attention of investigators and design and construction engineers in this field. Although the methods of practical application are somewhat different, it seems fairly well established that concrete design by water-cement ratio and by void-cement ratio leads to substantially the same proportions of given materials for a desired strength, although proper design in either case should be based upon preliminary tests of the materials under conditions comparable to the expected field conditions. A Symposium on Field Control (Am. Soc. Testing Mats., *Proceedings*, vol. 27, II, 1927) emphasizes the importance of such operations as mixing, conveying and placing concrete, of construction and expansion joints and protection against injury to concrete poured in cold weather. R. B. Young discusses field testing of concrete and the several ways in which such tests may be interpreted to control the quality of concrete as actually placed in the structure. Field testing, comprising technical supervision of all the processes of concrete manufacture, is certain to assume increasingly greater importance in practical construction work. The advantages of the transverse test as a control of concrete strength are described by H. S. Mattimore, especially in connection with concrete for pavements in which the modulus of rupture is the basis of design.

The methods adopted in the construction of Wacker Drive, Chicago, as described by Arthur R. Lord (Am. Concrete Inst., *Proceedings*, vol. XXIII, 1927) illustrate the care and supervision required in the field to secure good concrete. This constructor is inclined to take issue with those who advocate control entirely by the water-cement ratio (see THE AMERICAN YEAR BOOK, 1926, p. 830) and emphasizes the importance of other factors. Selections of aggregates by the water-cement ratio must take into account the desired strength, density, and impermeability at the least cost. On outdoor concrete or where heavy reinforcing is used, the consistency of concrete must be controlled within much narrower limits than are usually advocated. To secure a dense concrete of uniform quality the consistency must be limited to the narrow range between the stiffness at which concrete begins to crumble and that wetness at which concrete begins to segregate. To work within this narrow range it is necessary to control the grading of the aggregate and the water content more closely than is commonly done. Mr. Lord holds that the problem of proportioning concrete is, and must remain, far more complex than the advocates of the water-cement ratio lead us to expect.

Some thought is being given to the qualifications of different kinds of natural stone for concrete aggregate. G. F. Loughlin (Am. Concrete Inst., *Proceedings*, vol. XXIII, 1927) points out that while the usual physical tests are adequate for the determination of some of the qualities of aggregate, they do not indicate certain other qualities, particularly resistance to prolonged weathering. A general review of the weathering qualities of natural rocks used as concrete aggregates shows that most of them, if free from weathering, are satisfactory; that certain materials, particularly the clay group and certain zeolites, are very objectionable; and that others, including micas concentrated in fine-grained flaky masses and calcite in finely disseminated grains among other minerals, may promote disintegration under certain

conditions. The whole question of the properties of mineral aggregate, both fine and coarse, as used in concrete merits thorough and fundamental study.

The American Concrete Institute (*Proceedings*, vol. XXIII, 1927) has adopted Tentative Building Regulations for the Use of Reinforced Concrete. They are intended to supplement the general provisions of building codes in order to provide for the proper design and construction of reinforced concrete structures, and are based upon the Standard Specifications for Concrete and Reinforced Concrete (see *THE AMERICAN YEAR BOOK*, 1925, p. 847). Efforts in this direction by authoritative bodies are most commendable, in that they crystallize into current practice the best judgment of experienced investigators and engineers.

Coal.—Increasing emphasis has been placed within the past year on considering coal as a raw material. Coal is no longer merely a fuel but a material that enters either in its original state or in processed form, as in coke, in many metallurgical and chemical processes. The production of the light volatile liquid fuels (gasoline substitutes) has been placed on a commercial basis so that it is now merely a question of price when many of these products will appear on the market.

Greater emphasis is being placed on the thermal value and physical properties of coal so that more consideration is being given to the preparation of exact methods of testing and chemical analysis. The need for thermal analysis is particularly marked in respect to the use of coal in powdered form which has developed to such an extent in the past few years. Coal is being purchased to an increasing extent on specification and the tests are required to form a part of such specifications. This general subject was very well covered in a paper presented at the International Congress for Testing Materials (*Proceedings*, 1927). This paper discussed Standard Sampling of Coal and Coke, the Present Status of Standardizing Methods for Analysis of Coal and Coke in the United

States, the Standardizing of Physical Tests of Coke and Their Interpretation, and the Value of Standard Tests for Determining Suitability of Coal for Manufacturing Gas and By-Products.

An attempt is being made to classify all types of coal from the lignite to the anthracite. This classification is being worked out from several angles, one the scientific classification, based principally upon the constitution, composition and geological occurrence of coal, and a use classification, based principally upon the uses of coal and the commercial practices but also correlated with the scientific classification.

Rubber.—The outstanding development with respect to rubber products is the consideration being given to performance tests. This has been along several lines, namely, study of abrasion tests, of life tests, of flexing tests and of rubber products for absorbing vibration. The flexing test is of particular importance in reference to rubber belts. No satisfactory test is at present available for evaluating rubber belts with the exception of actual service tests. The new flexing test is intended to fill this need. Abrasion is of interest in connection with many products, particularly tire stocks. Aging is also important in that most rubber products fail, due to some change taking place with age, perhaps oxidation. Since certain compounds are more resistant than others to this aging effect it would be well to have a test to evaluate this factor in advance.

TESTING

X-Ray Examination. — Among many interesting developments in the realm of testing materials is the very remarkable one of examination of materials by the X-ray. In the Edgar Marburg Lecture delivered this year before the American Society for Testing Materials (*Proceedings*, vol. 27, II, 1927), Dr. George L. Clark presented the latest accomplishments in this method of study. Applications of radiography to the location of interior defects in metal objects, especially castings, have been made for several years and have resulted in

considerable improvement in casting and welding technique. This has significance in commercial testing of castings subject to high temperatures and high pressures, as in oil-cracking stills and modern power plants. When applied to the examination of ash lumber for use in airplane wings, this method shows clearly the distinction between brash and good wood. The major part of the lecture is devoted to a description of more recent applications of the X-ray in the study of crystal structures, particularly by means of the "pinhole" diffraction method. A metal specimen which consists of one crystal grain is distinguished by a regular pinhole pattern of diffraction spots, showing a symmetry of number and arrangement on zone ellipses which cannot be obscured, even though the X-ray beam does not pass through the grain parallel to the principal axis. The pinhole diffraction method finds practical application, not only in the study of metals but of non-metals, crystallin organic and inorganic material, and colloidal and amorphous materials such as catalysts, carbon black, rubber, cellulose and silk. The possibilities of this scientific tool are just beginning to be appreciated, and the X-ray gives promise of becoming the most fundamental method of examination of the composition of materials.

Magnetic Analysis.—This year has seen substantial progress toward the goal of non-destructive testing by means of determining magnetic characteristics in relation to desired physical properties of iron and steel. A new method of magnetic inspection employing the cathode ray oscillograph is described by A. V. deForest (Am. Soc. Testing Mats., *Proceedings*, vol. 27, I, 1927) by which the entire hysteresis loop or the difference between two similar loops is recorded graphically. This method has great advantages when magnetic analysis is applied to commercial material of necessarily broad tolerances with respect to size, composition and treatment. Thomas Spooner (*ibid*) has developed a method using the cathode ray oscillograph with much higher inductions that make it particularly

suitable for the testing of heat-treated steel.

J. A. Sams (*ibid*) has devised a new apparatus, the duroscope, for the magnetic testing of tools and cutters for durability or serviceability which is superior in speed, consistency and adaptability to the methods now in vogue. The apparatus is so designed as to be independent of the usual variations in voltage and frequency as experienced in shop practice. Comparisons of the duroscope, and brinell, Rockwell and scleroscope hardness tests on tool steels indicate the possibilities of the apparatus by its straight line characteristics over the working range of tool steels.

Another practical application of magnetic testing has been made by J. A. Capp in the inspection of steam turbine bucket wheels (*ibid*). The method consists in the indication of the presence of interior defects by changes which they cause in the reluctance of a magnetic circuit of which the wheel under test is the only variable part. The indications are obtained by the use of a high-sensitivity galvanometer connected to measuring coils located in the specially designed pole-tips of the electro-magnet between which the wheel is rotated. It has thus been possible, without in any way affecting the wheel itself, to determine its homogeneity and soundness with a truly remarkable degree of sensitivity.

Spectrographic Analysis.—In the quartz spectrograph we have another scientific tool available to the materials engineer. Developed by Hilger in England, F. A. Hull and G. J. Steele describe some industrial applications of the spectrograph to qualitative and, to a limited degree, quantitative analyses of various metals and alloys (Am. Soc. Testing Mats., *Proceedings*, vol. 27, II, 1927). By means of the spectrograph there is secured a photographic reproduction of the spectrum lines of a metal or alloy obtained by making the metal tested an electrode in a sparking and arcing electrical circuit. The qualitative applications are many. The usual chemical analyses to determine

the presence of impurities may at times require several days; whereas by this new method a spectrogram showing the spectrum lines of the elements in the metal may be quickly obtained and the presence or absence of given elements noted. In preparing for the quantitative wet analysis of many alloys whose elemental composition is uncertain, it is often important for the analyst to know such composition in planning the analysis, and the spectrograph offers a quick and reliable means of determining the elemental composition. Another practical application is in the quick differentiation between apparently similar stocks of materials which in a large industrial plant at times becomes mixed.

The quantitative applications offer a still greater field of usefulness, but such development will come only after considerable collaboration between interested laboratories and particularly with the production of accurate standards. The quantity of quite a number of elements present as impurities in given metals and alloys can now, however, be estimated by observation of the manner in which the intensity of certain lines in the spectrum of that element increases with increase in percentage. Considerable experimenting has been done with the determination of percentage of bismuth, antimony, copper, and tin in pig lead. The use of this method is possible today in many cases where it is desired to know whether a certain element is present in a metal or alloy in less than a specified amount.

Wear Testing.—The loss of metal by wear is second only to the loss by corrosion. Therefore, tests for determining the resistance of metals to various form of wear are of much importance; but a review of experience over many years has made it clear that wear testing of metals is a complicated subject and it is not an easy thing to secure test data that can be relied upon to give a correct indication of wear properties. H. J. French ("Wear Testing of Metals," *Am. Soc. Testing Mats., Proceedings*, vol. 27, II, 1927) has pointed out several features that have

an important bearing on the reliability of wear tests, notably the initial condition of the surface of the metal and the tendency during the test to form a surface film. He recommends, therefore, that until more fundamental information becomes available, each application of metals involving wear should be considered by itself. Tests should be made under conditions approximating as closely as possible those to which the materials will be subjected in service, involving often the development of special machines; and, because of this, there is now no single testing machine universally applicable. These conclusions are supported by M. Spindel (*Int. Congress Testing Mats., Proceedings*, 1927), who points out how little the ordinary tests for strength, ductility, hardness and other properties of metals are indicative of the resistance to wear, which is shown to depend upon the surface condition of the parts in contact, whether or not a lubricant is used, the pressure applied and more particularly the rate of travel of the parts in contact. H. J. French and H. K. Herschman (*Am. Soc. Steel Treating, Transactions*, 1927) describe a special laboratory wear-testing machine devised in studying the wear of plug gauges as applied to file-hard high-carbon steel, an aluminum "piston alloy" and a cast iron. It was found that under the conditions of metal-to-metal contact chromium-plated gauges showed the highest resistance to wear. In the presence of a non-metallic abrasive a high-carbon high-chromium iron alloy and chromium-plated gauges showed better resistance to wear than the customary high-carbon steels.

Electric Telemeter.—The electric telemeter, as described by O. S. Peters (*Am. Soc. Testing Mats., Proceedings*, vol. 27, II, 1927), is a remote reading and remote recording device for the measurement of strains arising in a structure from either slow or rapid changes of load, and makes use of the fact that the electrical resistance of a stack of carbon plates varies with the pressure on the plates. The remote reading feature is very useful in many cases in that

strains can be measured in places that would be otherwise almost inaccessible for field reading, and it is also possible to obtain simultaneous records of strains at a number of widely separated points. A recent outstanding use of the telemeter was for measuring the strains in mass concrete at the Stevenson Creek Test Arch Dam. The apparatus has been applied to the measurement of fluid pressures up to 40,000 lb. per square inch.

Tests of Metal Sheets.—The general subject of testing thin sheet metals is receiving considerable attention. An exhaustive study on various shapes of test specimens of sheet steel by J. T. Nichols, E. S. Tayler-son and J. C. Whetzel (*Am. Soc. Testing Mats., Proceedings*, vol. 27, II, 1927) shows that the yield point and tensile strength are only slightly affected by the shape and, for material of the same grade, the elongation is a definite function of the size of the gauge section. The economic value of the tension test as applied to thin sheet metals is described by R. L. Templin (*ibid*) who shows the commercial application of tension test data. As a result of these investigations a proposed standard specimen for use in the tension testing of thin sheet metals was developed this year by the Committee on Methods of Testing (*Am. Soc. Testing Mats., Proceedings*, vol. 27, I, 1927) and has been incorporated in its Tentative Methods of Tension Testing of Metallic Materials. A paper by H. N. Van Deusen, L. I. Shaw and C. H. Davis (*Am. Soc. Testing Mats., Proceedings*, vol. 27, II, 1927) gives the results of a very extensive investigation on the testing of thin-sheet non-ferrous metals, with particular reference to the Rockwell hardness test.

STANDARDIZATION

Considerable impetus has been given to standardization work in recent years. The value of standard specifications over individually prepared specifications is being appreciated to a considerable extent with a corresponding demand on standard-making bodies for standards to meet

this need. The Federal Specifications Board has been established to formulate standard specifications for all government bodies. The Division of Simplified Practice has brought about simplification of sizes and grades in a number of industries, thus effecting considerable economy.

In the A.S.T.M., the three-year period ending with 1927 has shown a 50 per cent increase in the number of standards for materials. The past year especially has been one of intense activity in standardization. Ninety-five tentative specifications have been advanced to standard. Revisions have been made in a number of standards in order that these should represent the latest thoughts on standards for the materials in question. New standards to the number of 45 were submitted during the year. These for the most part were intended to round out groups of specifications already submitted. For example, seven new pigment specifications were issued in order to complete the group of specifications covering pigments. In addition, several specifications were formulated covering zinc-coated wire fencing. The group of specifications covering non-ferrous castings and casting materials was rounded out by the addition of a specification covering yellow brass sand castings for general purposes.

A new field was covered in the preparation of specifications for clay fire brick. The importance of having tests applicable to the testing of concrete and concrete aggregates in the field was recognized in the preparation of several test methods covering the determination of approximate specific gravity, percentage of voids and of surface moisture in fine aggregate. The textile field continues to be a fertile field for the preparation of standards. An important standard prepared during the year was one covering the identification of textile fibers and their quantitative determination in mixed goods. A companion method is one for the analysis of roofing felt for fiber composition. Tests for specific qualities of material also continue to appear, as for instance, the methods of test for determining the insulating quali-

ties of slate. Those enumerated are only a few of the many tests and specifications submitted during the year, but serve to show the variety of materials and tests that require consideration.

INDUSTRIAL STANDARDIZATION

By P. G. AGNEW

SECRETARY, AMERICAN ENGINEERING STANDARDS COMMITTEE

BROADENING INTEREST

Popular Trend.—In the past, interest in industrial standardization has been limited almost entirely to the technical man and the industrialist, but during the last year this interest has been gradually spreading and standardization has already become a matter of considerable popular concern. Generally the movement is looked upon as a benign one which has already developed into an important factor in our material prosperity, and in the future it is bound to become a much more important factor in making yet more abundant the necessities and comforts of the material side of our lives. On the other hand, from time to time, a critical note has been raised as to whether it may not be leading to a standardization of our minds and our personalities.

Standardization and the Man in the Street.—The use of industrial standardization as a tool has been almost entirely limited to articles and materials purchased in quantities by large organized consumers, such as purchases by manufacturers, public utilities and governmental agencies, of raw and semi-finished materials, machinery, technical supplies, etc. The ultimate consumer, particularly the home-maker, is practically without standards in every field, not having the advantage, as has the corporate or governmental consumer, of technical services and expert staffs. Largely as the result of the activities of organizations in the field of home economics, the question has been brought sharply to the fore as to whether the benefits of standardization cannot be extended to the ultimate consumer, that is, to the man in the street—and particularly to his wife, who, it is generally agreed,

spends something like three-fourths of the national income. As concrete steps in such a movement, the American Home Economics Association has officially requested the American Engineering Standards Committee to undertake to bring about nationally recognized specifications for two commodities which are of economic importance in the household; namely, household refrigerators and sheets and sheeting.

"Your Money's Worth."—Interest in this phase of the subject is heightened by the publication during the year of Chase and Schlink's *Your Money's Worth*. This book deals with the difficulties which confront the common man in buying the things of everyday life, and which arise from the pressure of the ingeniously directed and powerful forces of salesmanship, in all of which as an individual and without expert aid he has no effective means of discrimination. The main theses of the book, which is written in popular style, are: (1) that the integrity of our distribution system has been seriously impaired by the overwhelming sweep of the modern technique of advertising, and, (2) that the most promising solution is to supplement present merchandising methods by standards of quality to be used as a basis of purchase, just as such standards are now used by progressive industrial concerns and by the Federal Government in their purchases of all sorts of supplies. The book, which has attained a wide circulation, has led to a spirited discussion of the whole general subject by department stores and advertising men.

Buying on Specifications.—One of the most difficult problems which must be met in any movement to place retail purchasing on a basis of

nationally recognized quality specifications is that of finding means of assuring compliance with the standards. In the industrial field this is accomplished by means of tests and inspection. An interesting experiment looking to this end is being tried out by the Bureau of Standards in the form of a "certification plan" by which the manufacturer is listed as formally certifying his products to be in accordance with the specifications. To the same end the Bureau is publishing a classified list of commercial, college and governmental laboratories.

GOVERNMENT ACTIVITIES

Bureau of Standards.—The most important development in government activities in the standardization field has been the administrative reorganization of the Bureau of Standards. Under the new plan one assistant director has general oversight of research and testing which in the past has constituted the larger part of the Bureau's activities. Another assistant director is in charge of the Commercial Standards Group. This includes the Division of Simplified Practice which, although always a part of the Bureau of Standards, has previously functioned as an adjunct to the office of the Secretary of Commerce. The reorganization will bring about closer coordination between the Division's activities and those of the other divisions of the Bureau. The Commercial Standards Group also includes a new Division of Specifications, and a new Commercial Standards Unit. The Group will also maintain its close contact with the Division of Building and Housing and the Federal Specifications Board.

The Commercial Standards Unit is to deal with grades, qualities, specifications and other industrial standards by methods which are mostly modelled after and, in many respects, identical with those developed by the Division of Simplified Practice. The details of the plan have not yet been announced, so that it is impossible as yet to say just what functions in the industrial standardization movement the new organization is designed to fulfill; for example, its re-

lation to the standardization activities of the trade associations and the technical societies on the one hand, and the American Engineering Standards Committee, the national clearing house, on the other. Apparently specifications issued by the Federal Specifications Board will be used as a principal means through which the Bureau will enter the field of specifications.

Division of Simplified Practice.—The activities of this Division are now in their sixth year, and have exerted a highly stimulating effect on the whole standardization movement. The Division has carried through over 80 recommendations covering an extremely wide range of commodities.

Federal Specifications Board.—The unification of Government specifications under this Board has reached a point where the main lines of Government commodities are covered. More than 500 specifications have been approved, and a considerable number have been revised and reached the second edition. While many contacts with industrial groups have been maintained in the work, to a considerable extent through the American Engineering Standards Committee, much yet remains to be done in thoroughly coordinating these Government specifications with those in general use in the industries.

AGRICULTURAL PRODUCTS

Bureau of Agricultural Economics.—For the first time this Bureau has issued a general outline of the status of the work on standards for farm products (Circular No. 8). In a general way the work which has been accomplished includes practically the entire range of grains, fruits, vegetables, forage crops, cotton, wool, tobacco, livestock and meats, and a group of standards is now available on each of these general subjects. Practically all of this work has been carried out under the initiative and general direction of the Bureau.

Federal Inspection.—A small part of these standards, notably those on grain and cotton, are made mandatory by national law for interstate shipments. The bulk of the work,

however, is wholly on a voluntary basis, and this is in line with the present policy of the Department of Agriculture. The Department maintains an extensive system of inspection, which is available to interested commercial and producing groups. It is stated that in round numbers there are now shipped annually a million cars of fruit and vegetables. Of this vast quantity approximately one-fifth is subject to Federal inspection. All of the hay, for example, shipped to the Chicago market, is now sold under certificates of inspection issued by the Department.

Use of Standards.—As is the case in standardization work in other industries, the use of the standards is almost wholly confined to large-scale purchases, and in the case of agricultural products is primarily limited to the large wholesale markets. However, in the case of two or three commodities a trail is being blazed to the home of the ultimate consumer. The most important of these is butter.

INTERNATIONAL COOPERATION

Organization.—National standardizing bodies, similar to the A E S C, now exist in twenty other countries: Australia, Austria, Belgium, Canada, Czechoslovakia, Denmark, Finland, France, Germany, Great Britain, Holland, Hungary, Italy, Japan, Norway, Peru, Poland, Russia, Sweden and Switzerland. At a meeting held in London in November last, it was decided to proceed with the organization of a loose cooperative federation which will occupy the general field of standardization in the more technical industries with the exception of electrical standards, which field is already organized into an International Electrotechnical Commission. The new organization is the result of informal cooperation between the various national bodies extending over several years. The movement for a definite organization was launched at a meeting in New York in 1926.

International Electrotechnical Commission.—In September, 1927, the Commission held a most successful meeting in Bellagio, Italy. Twenty-five nations were represented, there

being some thirty delegates from the United States. Group meetings were held on fourteen different technical subjects.

Pan-American Standardization Conference.—In June, 1927, there was held in Washington the second conference, following the Pan-American Commercial Conference. The principal discussions were on subjects of primary interest to Latin-American countries and included cocoa, cereals, coffee, fruits, hides and skins, oleaginous seeds and wool. The work of the Pan-American conferences is still in a relatively early stage, and consequently the purpose has as yet been to provide means for interchange of information on commercial and trade practices, consideration of desirability and possibility of standardizing nomenclature, grades, etc., of products of importance in Pan-American trade, rather than attempting to proceed at once to the formal setting up of standards.

THE AMERICAN ENGINEERING STANDARDS COMMITTEE

The growth of the American Engineering Standards Committee is typical of that in the technical industries generally. This organization serves as the national clearing house through which standardization by and within associations, societies and governmental agencies is coordinated and unified on a national scale. In eight years it has grown from a group of five engineering societies to a federation of thirty-six national organizations, over half of which are industrial associations, and in the work of which more than two hundred and fifty national organizations are officially cooperating.

During the year more than a score of new standards were developed, each of which represents the cooperative work of a dozen to twenty national industrial groups. At the end of the year one hundred and fifteen standards in all had been approved, about two hundred and fifty projects having official status. These cover civil engineering and the building trades, mechanical and electrical engineering, transportation, marine engineering, ferrous and non-ferrous

metallurgy, the chemical, textile, and wood industries, agriculture, mining, etc. To meet the insistent demand for standardization in fields hitherto

untouched, it has lately somewhat revised its methods of procedure, providing for greater elasticity and dispatch in its work.

COMMERCIAL AVIATION

By ARCHIBALD BLACK

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A YEAR OF PROGRESS

The year 1927 will be recorded in aeronautical history as one of substantial progress,—particularly on the commercial side. While technical development has been continued, the progress of outstanding importance has been that accomplished in furthering commercial application of aircraft. Gradually the military aspect of aviation is becoming eclipsed by the tremendous potential importance of its commercial side. During the year there were completed a number of historic flights which must be chronicled in any résumé of commercial operations because of their effect in accelerating development.

This applies all the more particularly to the United States which, a few years ago, lagged behind some other countries in the field of air transport, but which in more recent years has given an excellent account of itself in this class of operation. While commercial development of aviation in the United States was well under way at the beginning of the year, a tremendous forward push was given by a nonstop flight of Charles A. Lindbergh across the Atlantic from New York to Paris, and by several other flights of similar nature which were made by others shortly after.

TRANSOCEANIC FLIGHTS

The flights of Lindbergh from New York to Paris; of Byrd and his associates from New York to France; of Chamberlin and Levine from New York to Germany; of Brock and Schlee practically around the world; of Maitland and Hagenberger from Oakland, California, to the Hawaiian Islands, and several others were significant as indicating the reliability of modern aircraft engines and the

great increase in duration of flight possible with present-day airplanes. In this respect they performed a useful purpose. However, it is well to record the fact that such flights fall within the classification of record achievements. They do not demonstrate future possibility of commercial services of this character any more than the speed of racing automobiles demonstrates the possibility of similar performance for commercial motor buses of the near future. However, the over-ocean flights served an important purpose in turning the spotlight of publicity upon the existing development of aviation. Partly as a result of this and partly through the natural growth of interest, an important market is now developing in the sales of airplanes to certain classes of the public.

AIRPLANE AND ENGINE DEVELOPMENT

Engine.—The supply of moderate-powered war-surplus engines is now approaching its end, hence the development of new models is being increased. The Fairchild Caminez 135 horsepower air-cooled "cam" type is one of the outstanding developments in this field because of its low speed of rotation. This is an important feature, as it permits the use of larger diameter propellers, which increase the effective power available when the airplane is taking off and climbing. Several other moderate-powered engines are now available in the United States, including the 60-70 H.P. Aircat, the 140 H.P. Bailey, 75 H.P. Kinney-Noble and some others. The Pratt & Whitney "Wasp," a 425 H.P. radial air-cooled engine, has now seen extended service in transport airplanes and is earning

COMMERCIAL AVIATION

a reputation comparable with that of the 220 H.P. Wright "Whirlwind" which is used in so many commercial airplanes and with which the trans-oceanic flights were made. It is interesting to note also that the Packard Company has developed a 24-cylinder 1300 H.P. water-cooled engine (up-to-date confined to military use) with the amazingly low weight of 1.135 pounds per horsepower.

Airplane.—Activity in airplane development has been more along the lines of greater production than in radical departures. However, some innovations are well worthy of note, including extension of the Handley-Page experiments with slotted wings and the development of an automatic device of this type which is expected to prevent accidental "stalling" of airplanes,—a frequent cause of accidents in the hands of inexperienced pilots. The Fairchild folding wing monoplane is another interesting development and was the first folding wing type to come into general commercial use in transport service.

Guggenheim Loans.—To accelerate the growth of passenger-carrying operations and the development of suitable airplanes for this service, the Daniel Guggenheim Fund for Promotion of Aeronautics announced a plan whereby equipment loans would be made to a selected air route operator. Western Air Express, Inc., was selected under this plan and a "model"

route is to be operated between Los Angeles and San Francisco. Three-motored 14-passenger airplanes of Fokker design are now being constructed for the service.

AIR TRANSPORT AND MILEAGE

Air Mail.—During the year air mail traffic in the United States increased greatly, as shown by the accompanying Table I, which is based upon information furnished by C. C. Gove, Acting Assistant Postmaster-General. During the year, the carriage of express matter, in cooperation with the American Railway Express Company, was inaugurated but this class of service has not been in operation for a sufficient length of time to justify publication of traffic data. Several of the air mail contractors are now carrying passengers also, but to date the chief efforts have been concentrated on development of mail traffic, as this is by far the most lucrative class. Civil flying has been increasing rapidly in the United States and an enormous mileage is now being accumulated annually. In the Fall of 1927, the office of the Assistant Secretary of Commerce for Aeronautics issued a report on civil flying, covering the first six months of the year and the general summary from this report is given on the next page as Table 2.

United States Leads in Air Mileage.—From consideration of table 2,

TABLE 1—MILEAGE AND TRAFFIC STATISTICS FOR PRIVATELY OPERATED U. S. AIR MAIL ROUTES

(Post Office Department figures)

Month	Pounds of Mail Carried by Air Routes	Compensation Paid to Contractor for Transport by Air	Miles Flown by Air Mail Routes
December, 1926	37,823	\$ 109,488	215,686
January, 1927	32,510	93,550	205,612
February	35,037	101,263	191,383
March	42,111	121,987	233,308
April	45,856	133,130	231,998
May	46,132	133,738	248,109
June	55,026	159,202	250,491
July	99,589	250,891	375,923
August	102,051	258,963	376,998
September	146,486	312,810	444,519
October	153,649	329,532	Not yet available
November	141,992	304,083	" " "
	938,262	\$2,308,637	2,308,637 (10 months)*

* Total for 12 months ending Sept. 30 = 2,762,138 miles.

XIX. ENGINEERING AND CONSTRUCTION

TABLE 2—TOTAL FLYING IN THE UNITED STATES DURING FIRST SIX MONTHS OF 1927

(Figures from United States Department of Commerce)

	Miles Flown	Passengers ^b
Scheduled flying by airway operators.....	2,642,364	1,891
Miscellaneous flying by airway operators.....	362,249	8,305
Flying by air-service operators, including aerial taxi and all other classes.....	9,373,320 ^a	385,450 ^a
Private owners	Unknown	Unknown
Manufacturers	Unknown	Unknown
Contests, races, meets, etc.....	Unknown	Unknown
Known total	12,377,933	395,646
Year total on this basis of operations.....	24,755,866	791,292

^a Estimated.

^b Includes both those carried free and for hire.

it will be noted that civil operators in the first half of the year were running at the rate of 24,755,866 airplane-miles per year. This total is undoubtedly conservative, as operations in the latter part of the year were still further increased. The most reliable figures on operations in European countries, given in Table 3, indicate that operations of all regularly operated air services on that continent totalled less than 10,000,000 airplane miles in 1926. Civil flying in Europe is largely confined to the operation of these regular services and no counterpart of the American "air taxi" exists over there. It thus seems unlikely that the total

TABLE 4—OUTSTANDING WORLD RECORDS

Duration (Germany).
Edzard and Riscits, Junkers W-33, Junkers L5, 230 HP, at Dessau, Aug. 3-4-5, 1927. 52 hours, 22 minutes, 31 seconds.

Distance (Airline) (United States).
Clarence D. Chamberlin, Wright-Bellanca, Wright J-5, 200 HP, Roosevelt Field to Isleben, Germany, June 4-5-6, 1927. 6494 km. (3911 miles).

Altitude (United States).
Lt. C. C. Champion, U.S.N., Wright Apache, Pratt & Whitney "Wasp" Supercharged, 425 HP, at Anacostia, D. C., July 25, 1927. 11,753 meters (38,559 feet).

Maximum Speed (France).
Warrant Officer Bonnett, Ferbois monoplane, Hispano-Suiza, 450 HP, at Istres, France, Dec. 11, 1924. 448.171 k.p.h. (278.480 m.p.h.).

Greatest Pay Load Carried to an Altitude of 2,000 Meters (6,671.7 Feet) (France).
L. Bossoutrot, super Farman-Goliath, 4 Farman 500 HP ea., at Le Bourget, Nov. 16, 1925. 6,000 kgs (13,228 lbs.).

TABLE 3—FLYING OPERATIONS ON AIR TRANSPORT ROUTES OF THE WORLD

FOR 12-MONTH PERIODS 1926-27
AS NEARLY AS POSSIBLE COMPARABLE
AND SO FAR AS AVAILABLE

(Scheduled services only)

Europe:	
German operated routes.....	3,816,144 *
French " "	3,243,900
British " "	840,000
Dutch " "	597,500
Russian " "	311,000 †
Swiss " "	210,340
Czechoslovakian " "	170,895
Danish " "	126,730
Total European	9,316,509
Other Countries:	
United States of America...	4,407,263
Canadian	631,715 ‡
Australian	417,964
World total.....	14,773,451

* All services suspended for three months due to financial difficulties.

† Incomplete figures.

‡ Including some non-scheduled flying.

of all classes of civil flying in Europe exceeded about 12,000,000 airplane-miles during the year. On this basis it is evident that civil airplane operators in the United States fly about as much in six months as all of the operators in the entire continent of Europe fly in a year. Visitors to Europe frequently return with the opposite impression, but this is undoubtedly accounted for in the fact that European routes depend mainly on passenger traffic. Thus, the casual observer is brought into more intimate contact with European routes than he is with the less conspicuous, but equally important, American air mail operations.

WORLD POSITION OF AMERICAN MACHINERY

By W. H. RASTALL

CHIEF, INDUSTRIAL MACHINERY DIVISION, DEPARTMENT OF COMMERCE

Productive Capacity.—The overwhelmingly preponderant position of the United States may be estimated from the fact that in 1925 American machinery manufacturers produced 57.6% of the world's total production of machinery. As compared with this British machinery manufacturers produced 13.6%, and German manufacturers 13.1%. Other countries showed a much smaller output. These figures represent conditions as they were in 1925, a year of relative prosperity for the United States and of depression in Great Britain and Germany, but nevertheless American capacity for production is even more favorable than the above figures indicate, for it has been estimated that in that year American industry was only operating at 74.5% capacity as contrasted with 87.1% in Great Britain and 57.6% in Germany.

Consumption of machinery in the different countries would present a somewhat different picture because allowance must be made for exports and imports, but it is estimated that the per capita consumption of industrial machinery was as follows:

United States	\$23.66
Canada	23.44
Australia	11.07
Great Britain	10.19
Germany	8.62
New Zealand	8.00
France	3.45
Union of South Africa.....	3.36
South and Central America.....	1.57
Japan	1.52
Russia	1.02
India .....	.17
China .....	.05

Since it has appeared that the standard of living in the different countries is largely the result of the per capita production of goods in that country, and that machinery goes far towards increasing per capita production, these figures provide a very interesting commentary on the wage levels in these several countries.

The high degree of mechanism found in American industry is an important cause of the prosperity of

this country. The rapid increase in Great Britain is significant while the returns for countries like France, or those less adequately recognized, indicates the direction in which economic progress is possible.

Machinery Employment.—It is further interesting to note that the number of workmen employed in the machinery industry of the United States in 1925 was 582,000; in Great Britain 500,000; in Germany 452,000, so that although there is a wide margin in the value of machinery produced in these different countries, the difference in the number of workmen required does not at all correspond, being approximately one-half million in each of these three countries.

Productive Value.—The value of machinery produced per workman is as follows:

United States	\$5,192.00
Canada	4,225.00
Australia	1,800.00
Germany	1,527.00
France	1,459.00
Great Britain	1,432.00
Japan	1,085.00
Russia	980.00

It is interesting to note the relationship between wages and productiveness. Frequently the higher paid workman more than justifies his income, although, of course, better factory equipment, more efficient management, improved transportation and other factors contribute to this result. Credit for the above figures should be given to the Verein Deutscher Machinebau-Anstalten, which submitted a report on this to the League of Nations and in so doing pointed out certain improvements in the statistical material from which these figures are derived.

In submitting this statement it is not supposed to be meticulously accurate, but in a limited way it does describe the situation now existing in the machinery trade of the world and is particularly gratifying to Americans, for from an impartial

source the outstanding position of American industry is demonstrated and the high output per worker is recognized.

World Trade in Machinery.—While the world's production of machinery in 1925 was about \$5,250,000,000, the volume that entered international trade was about \$875,000,000—a large foreign market that should greatly interest American manufacturers. The participation of the more important countries in this trade was as follows:

United States	34.8%
Great Britain	24.4%
Germany	20.0%
France	4.6%
Switzerland	3.4%

America's Sales Problem.—Again it is indicated that the United States occupies the leading position, but there would seem to be causes for dissatisfaction in that American producers producing 57% of the world's machinery did not secure more than 35% of the volume entering international trade. This, however, is probably an inadequate description of the situation because American machinery is distinguished for its high quality; European machinery is more often produced on a price basis and in many of the world's markets it is quite difficult to sell expensive and highly productive machinery; at least there is always a very difficult sales problem confronting the manufacturer of expensive equipment. This is illustrated by the following figures showing the value per ton of machinery exported from the various countries:

United States	\$552.00
England	405.00
Germany	325.00
France	267.00

Although American machinery is recognized as enjoying unusual merit

and superior quality, and has a corresponding prestige in the world's markets, it is obviously difficult for the American sales manager to sell a \$552.00 product in competition with a German article for \$325.00; for although American machinery is undoubtedly worth more than its price would indicate, the sales manager has the burden of proving this to buyers in all of these foreign lands.

Customers.—On the other hand, it is interesting to remember that although Germany and Great Britain are leading competitors in this trade, they are also our best customers. The United Kingdom regularly imports about \$18,000,000 worth of American machinery annually, while Germany imports between \$3,000,000 and \$5,000,000 worth per year and would take more if the general business situation there made this possible.

There is also the matter of the importance of this export business to the manufacturers in the different countries. There are important American companies manufacturing heavy machinery which regularly export more than 50% of their production. There are similar British manufacturers who regularly export as much as 70%. These companies find foreign business peculiarly valuable for in addition to supplying an increased volume of business that is unusually attractive because it is sold under conditions that provide for prompt payment and a minimum of service, it also provides a diversity factor which stabilizes other business during business depression in their own countries. However, these returns show that on the average these various companies exported the following proportion of their production:

Great Britain	29.8%
Germany	25.3%
United States	10.1%

COGNATE SOCIETIES

- ALLIED BUILDING METAL INDUSTRIES.—25 W. 33rd St., New York, N. Y.
- AMERICAN CERAMIC SOCIETY.
- AMERICAN CONCRETE INSTITUTE.—2970 W. Grand Blvd., Detroit, Mich.
- AMERICAN CONSTRUCTION COUNCIL.—28 W. 44th St., New York, N. Y.
- AMERICAN ENGINEERING STANDARDS COMMITTEE.—29 W. 39th St., New York, N. Y.
- AMERICAN FOUNDRYMEN'S ASSOCIATION.—140 S. Dearborn St., Chicago, Ill.
- AMERICAN INSTITUTE OF CHEMICAL ENGINEERS.
- AMERICAN INSTITUTE OF ELECTRICAL ENGINEERS.—33 W. 39th St., New York, N. Y.
- AMERICAN INSTITUTE OF MINING AND METALLURGICAL ENGINEERS.—29 W. 39th St., New York, N. Y.
- AMERICAN INSTITUTE OF RADIO ENGINEERS.—37 W. 39th St., New York, N. Y.
- AMERICAN IRON AND STEEL INSTITUTE.—40 Rector St., New York, N. Y.
- AMERICAN RADIO RELAY LEAGUE, INC.—1711 Park St., Hartford, Conn.
- AMERICAN RAILWAY ENGINEERING ASSOCIATION.—431 S. Dearborn St., Chicago, Ill.
- AMERICAN ROAD BUILDERS ASSOCIATION.—Press Building, Washington, D. C.
- AMERICAN SOCIETY FOR STEEL TREATING.—4600 Prospect Ave., Cleveland, O.
- AMERICAN SOCIETY FOR TESTING MATERIALS.—1315 Spruce St., Philadelphia, Pa.
- AMERICAN SOCIETY OF CIVIL ENGINEERS.—33 West 39th St., New York, N. Y.
- AMERICAN SOCIETY OF HEATING AND VENTILATING ENGINEERS.—29 West 39th St., New York, N. Y.
- AMERICAN SOCIETY OF MECHANICAL ENGINEERS.—29 W. 39th St., New York, N. Y.
- AMERICAN SOCIETY OF MUNICIPAL ENGINEERS.
- AMERICAN SOCIETY OF NAVAL ENGINEERS.—Navy Department, Washington, D. C.
- AMERICAN SOCIETY OF REFRIGERATING ENGINEERS.—35 Warren St., New York, N. Y.
- AMERICAN SOCIETY OF SAFETY ENGINEERS.—25 W. 39th St., New York, N. Y.
- AMERICAN WELDING SOCIETY.—25 W. 39th St., New York, N. Y.
- BUILDING TRADES EMPLOYERS' ASSOCIATION.—34 W. 33rd St., New York, N. Y.
- COMMITTEE ON EXPERIMENTAL POWER.—2 Rector Street, New York, N. Y.
- ENGINEERING FOUNDATION.—29 W. 39th St., New York, N. Y.
- INTERNATIONAL ASSOCIATION OF ELECTRICIANS.—15 W. 37th St., New York, N. Y.
- ILLUMINATING ENGINEERING SOCIETY.—29 W. 39th Street, New York, N. Y.
- INVENTORS' LEAGUE OF THE UNITED STATES.—114 Maiden Lane, New York, N. Y.
- METRIC ASSOCIATION.—156 Fifth Ave., New York, N. Y.
- NATIONAL AERONAUTIC ASSOCIATION.—1623 H. St., N. W., Washington, D. C.
- NATIONAL ELECTRIC LIGHT ASSOCIATION.—29 W. 39th St., New York, N. Y.
- NEW YORK ELECTRICAL SOCIETY.—29 W. 39th St., New York, N. Y.
- RADIO ENGINEERS ASSOCIATION OF AMERICA.—9 Church St., New York, N. Y.
- NATIONAL FIRE PROTECTION ASSOCIATION, Boston, Mass.
- SOCIETY FOR PROMOTION OF ENGINEERING EDUCATION.—25 W. 39th St., New York, N. Y.
- SOCIETY OF PROFESSIONAL AUTOMOBILE ENGINEERS OF THE U. S.—153 W. 64th St., New York, N. Y.
- SOCIETY OF AUTOMOTIVE ENGINEERS, INC.—29 W. 39th St., New York, N. Y.
- SOCIETY OF NAVAL ARCHITECTS AND MARINE ENGINEERS.—29 W. 39th St., New York, N. Y.
- AMERICAN STATISTICAL ASSOCIATION.—114 Woodward Bldg., Washington, D. C.

DIVISION XX

PHYSICAL SCIENCES

DYNAMICAL AND STRUCTURAL GEOLOGY

BY KIRTLEY F. MATHER

PROFESSOR, HARVARD UNIVERSITY

EARTH STRUCTURE

Intrageology.—The major structures of the Earth's interior continue to hold the attention of philosophical geologists. The most extended discussions at the meetings of the various geological associations during the winter of 1926-27 were concerned with the Earth's origin and its structural evolution; many of the papers and books published during the year deal wholly, or in part, with these subjects.

Isostasy.—In *Isostasy* (Dutton, 1927) William Bowie discusses in detail the theory so entitled, its development, proof, variations, geologic importance, and present status. According to this theory the globe is conceived to be in a somewhat plastic state, yielding by viscous movement, or by solid flow, to gravitational influences, so that from circumference to center, columns of equal diameter have equal weight, being in a sort of hydrostatic equilibrium with each other. Since columns extending to the Earth's center from mountain tops will be somewhat longer than those which extend downward from oceanic deeps, it follows that the former must contain material which, near the top at least, is deficient in density.

This theory, which Bowie believes to be well founded on fact, receives support from pendulum experiments which determine the force of gravity for different areas, from the determined form and curvature of the United States, and from the geologic

evidence that areas rise when unloading by erosion takes place, and that basins of deposition are known to be sinking. Since this shifting of material is constantly going on, isostatic equilibrium is never quite attained at the surface, though, because of constant adjustments, it is always very closely approximated. At a calculated depth of between 70 and 100 miles, however, isostatic compensation is regarded as being complete.

That isostasy has played a major rôle in the formation of folded mountain ranges is the belief of Andrew C. Lawson, expressed in his presidential address before the Madison, Wisconsin, meeting of the Geological Society of America, entitled "Folded Mountains and Isostasy" (*Bul. Amer. Geol. Soc.*, vol. 38, p. 253-74). In this paper there is assumed a shallow sea bordering a continent, with the two regions essentially in isostatic balance. Degradation of the land decreases the load, which is compensated by a transfer of mass from the segment beneath the sea to that beneath the continent. As a result the land is elevated and the sea floor depressed. The lowering of the sea floor establishes a geosyncline which becomes a trap for sediments. There is a continuity of further development, but the depression is periodic because of the periodicity of the settling and filling, and, hence, of the transfer of mass.

Elastasy.—Directly opposed to these views are those of T. C. Chamberlin ("Intrageology: Elastasy vs.

Isostasy," *Jour. Geol.*, vol. 35, p. 89-94), who cites the tidal investigations of Michelson, Gale, and Moulton as showing that the Earth responds to the attraction of the sun and moon in the distinctive mode of an elastic solid. The testimony of distortional seismic waves indicates that such liquid matter as may exist in the outer seven-eighths of the Earth's body is in a disseminated state—a testimony which is in complete harmony with the high degree of independence of volcanic action even in adjacent craters. The chief balancing factor, therefore, between the continents and the ocean basins is, according to Chamberlin, elastic strain rather than hydrostatic equilibrium. For this state of balance he proposes the term "elastasy." Elastasy holds the continents in their balanced state of great effective stability, although the ocean, the atmosphere, and even the sediments in the process of transportation may be thought of as being isotastic.

Chamberlin Theory.—In spite of the favor with which many geologists regard the Jeans-Jeffreys theory of Earth origin, it is evident that T. C. Chamberlin considers the idea of a formerly molten Earth untenable ("Working Concepts Appropriate to an Earth of Planetesimal Origin," *Year Book*, Carnegie Inst., no. 25), and still looks upon the Planetesimal Hypothesis, which he proposed over twenty years ago, as fundamentally sound. Instead of contracting to its present size, and being inherently superheated, the Earth, according to the planetesimal concept, had at first a low temperature; and whatever heat it has later developed is the product of compression, reorganization, or diastrophism. Both the structural hemispheres and the continental and oceanic segments were built up very slowly by the infall of material which was distributed within the Earth's sphere of control. There has been no rhythmic extrusion of lavas, as would be expected with an Earth having a liquid interior, on account of tidal action.

Batholiths.—Another fundamental problem of intrageology is that of the batholiths. Because of the im-

portance of this subject and its bearing on other geologic problems, and because of the wide diversity of present opinion on the matter, Frank F. Grout (*Jour. Geol.*, vol. 35, p. 311-18) has outlined the problem and given in detail the methods for its attack. As if in answer to Grout's article, the following paper in the same journal is "The Theory of Laterally Spreading Batholiths," by R. T. Chamberlin and T. A. Link. According to these writers, field studies show that batholiths, commonly regarded as enormous masses extending to great depths, actually, in many cases, rest on visible floors of older rocks.

There is evidence also of lateral movement of the magma to form tack-shaped or tongue-like masses of much less volume than has been usually considered to form such a structure. Laboratory experiments show that liquids forced upward through artificial strata do not progress straight upward, but follow inclined pathways, and actually spread out laterally if conditions permit. As a result of field and laboratory studies, it is concluded that batholiths develop characteristically during the late stages of folding in strongly folded areas. The forces which cause these structures to form are a combination of mountain building stresses and the magma's own force, both of which tend independently to develop wedge-shaped blocks.

Faults, Folds, and Joints.—Folding and shearing are the two types of deformation resulting from compressive stresses in the Earth's crust, but in the opinion of Baily Willis (*Bul. Amer. Assoc. Pet. Geol.*, vol. 11, pp. 31-47), folding requires special conditions for its development, and only rarely is it found to be the controlling type. The structure in any given region, therefore, is dependent on the type of deformation, which in turn is dependent on the original condition of the rocks at the time of their deformation. An analysis of field evidence and experimental data leads C. O. Swanson to believe (*Jour. Geol.*, vol. 35, p. 193-223) that in incompetent beds the direction of greatest shortening may be

interpreted as bisecting the angle between slip joints, or in other words, in such cases the so-called "strain theory" may be used as an aid to the interpretation of structural conditions. The joint patterns in competent beds may be used for the same purpose, but they are not regarded as being entirely reliable.

According to the Taylor-Wegener hypothesis of continental drift, mountains are formed along the borders of advancing land masses where the resistance to movement crumples the strata. Tensional effects, such as fault troughs, would thus be expected near the rear margins of moving land areas. As a matter of fact, as Stephen Taber points out in his paper on "Fault Troughs" (*Jour. Geol.*, vol. 35, p. 577-606), these structural phenomena are found on both sides of North America, and in both instances they differ in age from the mountain range on the other side. Fault troughs are classed by Taber as superficial or profound. The former are the result of earthquakes, volcanic activity, or tension; with the latter are associated large faults which extend down to the zone of flowage, and which are the result of tension. These profound fault troughs, however, have been formed as the result of the operation of a number of forces, though tension has probably played the dominant rôle.

GEOLOGIC PROCESSES

Reef Formation.—William Morris Davis, long a supporter of the Darwin-Dana theory of coral-reef origin, believes that the structural instability of the Fiji Islands (*Amer. Jour. Sci.* (5), vol. 14, p. 333-51) in no wise destroys the efficacy of that venerable hypothesis, but that it goes a long way toward disproving all other theories. He is of the opinion that these islands are the locus of a migrating anticline, whose existence is

attested by the variations in the changes of level exhibited in the Fiji Group.

Ground Water Action.—A study of "The Quicksands of Brazos County, Texas," by Frederick A. Burt (*Jour. Geol.*, vol. 35, p. 663-69), shows that quicksands are not a type of deposit, for the sand grains composing them display the same average mineral composition, texture, and degree of roundness as non-quicksands. They are, however, in all cases saturated with water and have reached a condition of equilibrium. Apparently they are always associated with perched water tables, in which there may be detected an upward movement of the water.

Sedimentation.—Chert and flint are cryptocrystalline varieties of quartz, which are of general interest since these materials have been so universally used by ancient man. After studying these substances for many years, W. A. Tarr has concluded that both flint and chert were formed by direct chemical precipitation on the sea floor. During the course of the year C. M. Nevin and D. W. Trainer, Jr., carried out successful laboratory experiments in the mechanics of delta formation which should prove of service in the interpretation of similar structures in the rock record (*Bul. Amer. Geol. Soc.*, Vol. 38, p. 451-58), and William H. Hass has shown that clay balls may be formed either by accretion, the usual method, or by the wearing away of projecting parts, as is the case in arroyo development.

To the average student of sedimentation, however, by far the most important event of the year was the appearance late in 1926 of the *Treatise on Sedimentation* by W. H. Twenhofel and collaborators. This manual, although far from perfect, is a mine of information and is practically indispensable to the worker in this field.

ECONOMIC GEOLOGY

BY W. ELMER EKBLAW

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GENERAL DEVELOPMENTS

Activities.—The year in economic geology has been characterized by the continuance of the search for new mineral deposits; improved technique in the production and transportation of low-grade deposits hitherto unexploited; the application of minerals, metals, and other alloys to new uses; and a widespread tendency toward the most refined methods in the treatment of ores, oils, coals, and other hydrocarbons and non-metallic minerals; all of which have dominated the mining industry for the past decade.

Research and Investigation.—The regular programs of research and investigation which the United States Geological Survey and the Bureau of Mines have maintained in past years have gone on unceasingly, and the results obtained have been of great importance to the mineral industries. The Geological Survey continues its researches in the fields of pure as well as applied geology, and the Bureau of Mines concentrates its efforts upon the wise and intelligent development of mineral resources. The practical work being done by the State surveys is becoming more extensive and more valuable, supplementing the private, corporate, and institutional research that is constantly going on.

PUBLICATIONS

Among the books in the field which have attracted attention and favorable notice are: *Grundlagen der Erdbenkunde* (Foundations of Seismology), by B. Gutenberg; *A Geographical Study of Coal and Iron in China*, by Wilfred Smith of the University of Liverpool; and *Ores and Industry in the Far East*, by H. Foster Bain. The United States Geological Survey, the Bureau of Mines, State surveys and bureaus and private sources have added valuable contributions to the literature of the subject. *Ores and Industry in the Far East* is probably one of the most significant books that

has been issued in economic geology for some time. Economists, students of international politics and, above all, the statesmen of the world, will be guided by the new way which this brilliant book points out for the solution of the Far East problem. The author points out in his final chapter, that "the Far Eastern countries do not contain such supplies of mineral resources as will permit the development of an industrial system according to Western standards" quite upsets our old idea of the ultimate economic dominance of the lands bordering the Pacific Basin, which has so generally been held for many years.

DISCOVERIES AND INVENTIONS

Bergius Patent.—One of the most significant developments in economic geology has been the widespread acceptance of the fact that the Bergius method of producing liquid hydrocarbons from lignite and other coals is not only possible, but may soon become commercially profitable. The fact that a great oil company has purchased the American rights to the use of this patent, indicates that when the reserves of liquid petroleum in the ground approach exhaustion, an adequate supply may be derived from this process or improvements upon it. To attempt to state at this time how significant the process may become, would be indiscreet, but that it holds tremendous possibilities is indisputable.

Microscopes and Field Instruments.—With highly developed improvements in microscopes and methods of illumination, the study of minute organisms in oil shales, and of the origin of minerals, and the investigation of alloys has gone on in accentuated manner. As a consequence of similar improvements and refinements in the field instruments, the work of former surveys, excellent as they were at the time, has been found to be so inaccurate as to necessitate immediate revision. Colorado particularly

has found as a result of new methods of field study that many of its mineral deposits may again become exceedingly valuable; and a complete new survey of the State, based upon new facts revealed by improved methods and improved instruments has begun.

METALLIC MINERALS

Bureau of Mines Summary.—The preliminary summary of the mineral resources of the United States in 1925 has been issued by the Bureau of Mines. This summary constitutes a valuable current statistical record giving the production of minerals and metals in the United States and foreign countries, as well as expert and matured figures for these commodities. Separate reprints of the sections on each of the metals have been issued and may be obtained at reasonable prices. The number of books in the field for the year has not been so large as usual.

Steel Cartel.—European producers of iron and steel have formed a cartel by which the production of these two products is to be cooperatively controlled. Though any intention to create a gigantic trust to compete with the dominant steel industry of the United States has been disclaimed, it is reasonable and safe to say that it is American competition which has forced this union of European interests for self-preservation.

Periodicals.—*Economic Geology* is the most important publication in the field of metallic minerals particularly, and to a lesser degree, in the field of non-metallic minerals. The *Journal of Geology* contains many geologic articles of economic significance.

NON-METALLIC MINERALS

The coal industry is still demoralized in the United States and serious troubles have affected the mines in the soft coal districts, and in Colorado. The use of coal continues to increase, not only for fuel and power, but for the production of gas and coal-tar products.

The petroleum industry has been exceedingly active. At the close of July of the past year the record for crude oil production was set with an

output of 2,600,000 barrels daily; of this 2,100,000 barrels was light oil and the rest heavy oil. Near the close of the year the production had diminished somewhat, due to the decline in the Seminole pool of Oklahoma, but by the end of the year, the production was increasing from deep drilling in California, and the Gulf Coast region.

The industry has continued in public notice because of the investigations of the alleged fraud in the leasing of the Teapot Dome and Elk Hills pools and the litigation consequent upon the investigation. The American Petroleum Institute has pledged itself to cooperate with the Government in a program of wise utilization and development of the petroleum and gas resources, and has published a volume on *American Petroleum—Supply and Demand*, in which the following conclusions were drawn from a survey that was made:

1. There is no imminent danger of the exhaustion of the petroleum reserves of the United States.
2. Waste in the production, transportation, refining, and distribution of petroleum is negligible.
3. It is estimated that after pumping and flowing there will remain in the area, now producing and proved, twenty-six billion (26,000,000,000) barrels of crude oil, a considerable portion of which can be recovered by improved and known processes such as flooding with water, the introduction of air and gas pressure and mining, when price justifies.
4. Improved methods of deep drilling below oil sands now producing will disclose in many areas deposits not hitherto available, which will be tantamount to the discovery of new fields. Improved methods of producing have been perfected which will make possible recovery of oil from these lower levels. The limit of deep drilling has not yet been reached.
5. The major oil reserves of the United States lie in some one billion one hundred million (1,100,000,000) acres of lands underlain by sedimentary rocks, and not fully explored, in which geology indicates oil is possible. With extended search new supplies will be found therein.
6. The nation has an additional reserve in the vast deposits of oil shale, coal, and lignites from all of which liquid fuel and lubricants may be extracted if and when the cost of recovery is justified by the price of these products. These deposits are so huge that they promise, under conservative estimates, an almost unlimited supply.

New Oil Fields. — Notable new fields of production in America are

MINERALOGY AND PETROGRAPHY

being developed in the Pecos and trans-Pecos districts of Texas, where extensive pools have been indicated, with no certainty of how extensive they may ultimately be found to be. Deep drilling has discovered new deposits below exhausted or partially exhausted fields in California, in Oklahoma, and in the Gulf Coastal Section of Texas.

Publications.—*The Bulletin of the American Association of Petroleum Geologists* continues to be the most important scientific publication that deals with the technique of oil deposits and their origin. It is the official publication of the Association which exercises a most salutary direction over the activities of its members in the exploratory field. *The Oil and Gas Journal* continues to be the authoritative voice of the general industry.

Potash.—The search for potash has gone on unceasingly, and the United States Geological Survey is inclined to believe that a supply adequate for United States agriculture has been determined. The use of fertilizers has become more general and more necessary throughout the United States, and the deposits of potash and phosphates are becoming increasingly valuable.

Structural materials are being investigated everywhere in the country,

especially those used in road building, and particularly by the State surveys. The Illinois State Geological Survey has created the position of geological engineer, and delegated to it the special investigation of road building materials. It has also published an interesting map and directory of the location of the mineral deposits of the State, in which the importance of the road-building materials is clearly indicated.

WATER AND POWER

Flood Control.—Floods in the Mississippi Valley and New England of unparalleled violence and widespread destruction have excited an exaggerated interest, perhaps, in the control of flood waters. Special measures have been found necessary to relieve the distress occasioned by these floods, and it is unreasonable to assume that special surveys and studies will be made to determine the best program for flood control.

The St. Lawrence-Great Lakes waterway retains its public interest. The Department of Commerce has issued a special number of its Domestic Commerce series on *Great Lakes to Ocean Waterways*, by E. S. Gregg and A. Lane Cricher, which surveys and describes the several possible routes from the lakes to the ocean which have been advocated.

MINERALOGY AND PETROGRAPHY

BY HERBERT P. WHITLOCK

AMERICAN MUSEUM OF NATURAL HISTORY, NEW YORK

MINERALOGY

Research.—The relatively new branch of mineralogy which deals with the atomic structure of minerals has during the year 1927 been the subject of much research work, and our knowledge respecting the mineral constituents of the earth has been materially increased along these lines. The year has also been marked by many discoveries of new minerals. The practical importance of these covers a wide range, from a new borate, which exists in sufficient quantities to constitute a mineral of dis-

tinctly economic value, to a new manganese-zinc arsenate represented at present by only one small specimen of no commercial value.

Mineral Discoveries.—It is becoming increasingly obvious that new minerals are, for the most part, to be found in those localities where unusual combinations of elements, or unusual conditions of mineral formation combine to favor the production of rare chemical compounds. Several such favorable localities have contributed largely in the past to the growing list of new minerals, and at least

three are to be credited with newly discovered species in 1927.

Compounds.—Three new mineral species have been added to the long list of rare compounds occurring at the mines of the New Jersey Zinc Company at Franklin, N. J. A new arsenate of manganese and zinc, discovered on a single specimen in the collection given to Harvard University by the late A. F. Holden, has been named *Holdenite* in his honor. A new boro-arsenate of calcium in very small white tetragonal crystals, has been named *Cahnite* in honor of Mr. Lazard Cahn, who first directed attention to this Franklin mineral. An arseno-silicate of manganese, magnesium and zinc, occurring in red-brown granular masses, has been named *McGovernite*, for J. J. McGovern, a former local collector of Franklin minerals.

Two new species have been discovered in the Belgian Congo, another locality which has lately become a prolific source of rare minerals. The first of these is a hydrated uranium oxide from Katanga, which, in recognition of its violet color has been named *ianthinite*. *Kipushite*, another new Congo mineral, is a phosphate of copper and zinc. It has been found in dark blue monoclinic crystals at the Prince Leopold mine at Kipushi. *Schultenite*, a new lead arsenate, named in honor of Baron A. de Schulten, comes from Tsumeb, a famous locality for rare minerals in the Otavi district of S. W. Africa. Only two specimens of this mineral are known.

A new titanate of the rare earths related to perovskite, and occurring in small, black, cubic crystals was discovered near Imandra, on the Kola Peninsula of Russia. The name *leopardite* has been given to it. *Tangeite* is a new mineral name which has been assigned to the crystalline, dark olive green copper vanadate from the Tange Gorge, in Fergana, Turkestan. *Sursassite* is a new manganese silicate from the Val d'Err, Switzerland, occurring in fibrous copper-red aggregates.

Two new minerals have been described from the material recently collected from the crater of Vesuvius.

Avogadrite, is a cæsium and potassium fluoborate of a yellow to reddish color; a sodium fluosilicate occurring in small hexagonal prisms has been named *mallardite*. *Aramayoite*, a new sulph-antimonate of silver and bismuth, from Chocaya, Potosi Department, Bolivia, derives its name from Señor Don Felix A. Aramayo. It occurs in irregular cleavable aggregates of a brilliant, metallic, iron-black color.

Eschwegite, named in honor of Baron W. L. Eschwege, is a new fava mineral of complex composition, containing yttrium and erbium. It is found in dark reddish gray pebbles (favas) on the upper Rio Doce, in Minas Geraes, Brazil. *Toddite*, from the Sudbury district, Ontario, is a new uranium columbate, occurring in small pitch-black rounded masses. It is named in honor of E. W. Todd of the Ontario Department of Mines. *Weissite*, named in honor of Dr. Loui Weiss, owner of the mine in which it was found at Vulcan, Colorado, is a new telluride of copper, occurring in bluish-black metallic veins.

A new sodium borite named *kernite*, from Kern County, California, occurs in large, colorless, orthorhombic crystal, and in white crystalline masses.

PETROGRAPHY

An important text, and one that has been awaited expectantly for some time has been published during the year. This is "*Eruptive rocks: their genesis, composition, classification, and their relation to ore deposits, with a chapter on meteorites*," by S. J. Shand (D. Van Nostrand Co.). Much that is embodied in this book has appeared from time to time as contributed by the author to scientific journals, and his position as an advocate of a simplified rock classification is well known. In the present volume this simplified classification is dealt with in detail and the system, which is founded on the idea of the degree to which rocks are saturated with respect to silica, is elaborated. Those among petrographers who favor a return to the older and less involved rock nomenclature will find much to encourage them in this work.

METEOROLOGY AND CLIMATOLOGY

By BURTON M. VARNEY

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AEROLOGY

Balloon Stations.—Reference was made in this section for 1926 to an expansion of the Weather Bureau program of upper air observation. During 1927 the number of balloon stations sending reports to the Central Office at Washington has been increased to 43. Several army stations and navy stations cooperate in this work. The result is of immeasurable benefit to the aviator, for the completed aerological map each day now tells him what the wind direction and velocity are, the kind and direction of motion of clouds, and the degree of visibility, at eight levels in the atmosphere; the surface, 250 meters above it, 500 m. above and 1,000, 1,500, 2,000, 3,000 and 4,000 meters. The value for research purposes of the data thus rapidly accumulating will be very great.

Guggenheim Committee.—Among the many important activities during 1927 of the Daniel Guggenheim Fund for the Promotion of Aeronautics, none may ultimately prove of greater importance than the formation of the Daniel Guggenheim Committee on Aeronautical Meteorology, with headquarters at the Weather Bureau in Washington. The purpose of the Committee is to "encourage and support investigations by suitable persons or institutions and to direct attention to essential problems." Of technical instructions adopted to the training of professional meteorologists, we have at present very little outside of the Weather Bureau. Only by such instruction can we develop a personnel of scientists adequate to the present and future needs of meteorology as an aid to aviation. One way to do this is to encourage instruction in physical meteorology in our universities. The Committee has therefore undertaken a survey to determine the present status of the subject in the belief that theoretical meteorology, as a field of instruction and

research leading to very important practical applications, should be effectively brought to the attention of physicists. The local forecasting of fog and haze being one of the most difficult and important problems from the standpoint of aviation, the Committee has secured the assignment, by the Weather Bureau, of H. C. Willett to a special study of European (especially Norwegian) methods of visibility forecasting. Mr. Willett's report on this study will form the basis of a visibility forecasting system for airways in this country.

Aerological Soundings.—In continuation of the annual International Aerological Soundings begun in May, 1926, the Weather Bureau during October, 1927 (that being "International Month"), made daily upper air soundings at Groesbeck, Texas. This campaign was carried out as part of a program of the International Commission for the Exploration of the Upper Air, and was a result of the proposal to the Commission by the U. S. Weather Bureau in 1925 that a series of soundings be carried on during a whole month each year. The great advantage of this plan for our knowledge of the upper air, lies in the fact of our being able to observe day-to-day changes to a degree not possible under the old scheme of international soundings on isolated days. The new system is being operated in addition to the old.

Pilot Charts.—The Hydrographic of the Navy began a unique service to aviation with the issue, on November 29, of the first pilot chart of the upper air over the North Atlantic. The chart was for December, and the series includes a chart for each month to correspond with the monthly pilot charts which for years have shown the wind conditions at the surface of the North Atlantic. The upper air charts indicate the wind directions at the surface, 2,500 feet, 5,000 feet and 10,000 feet altitudes.

AGRICULTURAL METEOROLOGY

Of the *Atlas of American Agriculture* which, when completed, will include the principal modern series of climatic charts of the United States, the sections on frost and the growing season, and on precipitation and humidity, have been available for some years. The sending to press of the temperature, sunshine and wind section in 1927 therefore constitutes an event.

FOREST METEOROLOGY

Study of our forest conservation problem has made still more clear than hitherto, the fact that climatic influences are equally important with soils in their effects on the distribution, reproduction and growth of forest trees. The need is for a comprehensive program of research, nationwide in its scope, and planned with a view to systematic work for years to come. Such a program has been developed by a special committee of the Washington Division of the Society of American Foresters, and published under the authorship of E. H. Clapp of the U. S. Forest Service, by the American Tree Association. Research in forest meteorology is duly stressed. The necessity is pointed out of increasing our knowledge of the functions of such factors as humidity and evaporation through the establishment of more observation stations, especially in the regions of forest types not hitherto much studied.

We need to know the climatic conditions under which not only individual species of forest trees flourish, but even races of trees. That this problem is exceedingly complicated and that it has already been attacked from many angles, is shown by investigations into the significance of spring and fall frosts in excluding Eastern hardwoods from our Western mountains, the variations of annual precipitation on individual species of trees, the importance of drought at critical vegetative periods, the length of growing season, the presence or absence of sufficient heat units for growth, the influence of low temperature and fog and rain on fertilization of different species, and so on.

The extent to which laboratory research is now and must in the future be the basis of much of our knowledge of forestry meteorology in respect, especially, to solar radiation is indicated by the work of such institutions as the Boyce Thompson Institute for Plant Research. As to forest protection, there is the whole vast problem of dealing with fire and insects. The report details a special program covering these phases.

The Fire Weather Warning Service of the Weather Bureau, to the great extent of which attention was directed in this section of the 1926 YEAR BOOK, has gone consistently forward. Chief among conferences on "fire weather" was the annual meeting of the American Association for the Advancement of Science, a symposium held by the Society of American Foresters in which Weather Bureau Officials took part.

THE U. S. WEATHER BUREAU

Weather and Aviation.—1927 was the banner year with respect to increase in the practical service of meteorological science to aviation. During no other period has the Weather Bureau been more frequently called upon for information about, and forecasts of, the weather over air routes between this country and Europe. Three circumstances combined to show how complete is the dependence of trans-Atlantic aviation upon a knowledge of the weather: there was a greater concentration of flights, either projected or accomplished, than in any previous summer; the weather over the North Atlantic was in general most unfavorable for flight; there was, in spite of active cooperation between many ship masters, the radio companies and the Weather Bureau, a deplorable lack of knowledge of the current weather over the vast areas of the Atlantic air lanes. Two days before Lindbergh's flight, for instance, no report was received at the Weather Bureau from any ship between mid-ocean and the Irish coast. For Chamberlin's crossing, more weather information from ships at sea was available than for any previous period. Our need, however, is for much more

than observations which have been made from ships merely.

To make possible the construction of really adequate ocean weather maps twice a day, as is necessary, this country must be able to draw upon reports from Canada, Greenland, Iceland and western Europe. It is to such broad-gauge cooperation for the good of international aviation that the Weather Bureau looks forward and toward which it is definitely moving. The service will be costly; present facilities will have to be enlarged; consistent trans-Atlantic flying will not be possible otherwise.

Weather Reports by Radio.—Of the increased services to the general public through aviation and business interests, probably none has greater potentialities than that quietly inaugurated on April 18 (the Navy Department generously cooperating) when the morning's weather observations from all over the country were sent in code just as they were received, to the Naval Radio Station at Arlington and thence broadcast through remote control from the Forecast Division of the Weather Bureau for the benefit of whomever they might concern. This daily service begins at 8:15 a.m., and within about an hour and a quarter thereafter, anyone possessing the necessary receiving set and a copy of the code may know the details of the weather over the entire United States.

MEETINGS AND CONFERENCES

American Geophysical Union.—

The topic for discussion at a symposium (October 29, Washington) was "Some Factors of Climatic Control." The significance of the composition of the atmosphere, of atmospheric and oceanic circulations, of the critical extent of the polar ice caps, of the elevation of the Rocky Mountains in Pleistocene time, was discussed. The Union's "Section of Meteorology" dealt with the "Needs and Possibilities of Measurements of Ultra-violet Light in the Solar Spectrum and of the Ozone Content of the High Atmosphere."

American Meteorological Society.

—The mid-winter (1926) meeting was

held at Philadelphia with the A.A.A. S., a wide variety of papers being presented. Dr. Dinsmore Alter gave results of his researches into the possibility of economic value in statistical investigations of periodicities in rainfall. W. J. Humphreys summarized his work on the genesis of tornadoes. W. C. Devereaux discussed the thunderstorm and its relation to municipal electric service. For a complete summary of the important papers read at this meeting and at the April meeting at Washington, reference must be made to the monthly *Bulletin* of the Society. Dr. C. F. Brooks, Secretary of the Society, continued his studies of ocean water temperature in cooperation with the work of the Marine Division of the Weather Bureau under Mr. F. G. Tingley on the same problem, the object being to determine what value surface water temperatures may possess for purposes of long-range weather forecasting.

METEOROLOGICAL EXPLORATIONS

A preliminary report on the meteorological methods and results of the First Greenland Expedition of the University of Michigan (Prof. W. H. Hobbs in charge) was published (*Geographical Review*, 1927). A second expedition to continue study of the atmosphere over Greenland was carried out in the summer of 1927. It is expected that the data from the numerous balloon soundings by the expedition will add greatly to our knowledge of the rôle of the Greenland anticyclone in the general circulation of the atmosphere.

RESEARCHES

Frost Formation.—In agricultural meteorology, one of the most thorough studies yet made of the influence of freezing temperatures upon the bloom of orchard trees was Ellison and Close's investigation of "Critical Spring Temperatures for Apples in the Yakima Valley, Washington." (*Monthly Weather Review*, January, 1927.) They used thousands of observations of the effects of temperature upon the blossoms of many varieties of apple, in various stages of development. Much depends upon the

moisture in the air when the air temperature reaches freezing. In general, when the air is damp enough for frost to form as soon as 32° is reached, the formation proceeding as temperature continues to fall, "severely low minimum temperatures can be endured with but slight damage," but the same temperatures without frost formation cause great destruction of the bloom. The matter is highly complicated, however, according to the stage of development of the bloom, the variety of apple, or the health of the individual tree. The authors reduce their findings to a system applicable by the practical orchardist in his problem of when, or when not, to set going defensive measures against frost.

Forest Fire Hazard.—Studies of the relations between weather and forest fire hazard have been yielding results of much value. G. W. Alexander of the Weather Bureau classified the thunderstorms of Washington State according to their relations to atmospheric pressure distribution (*Monthly Weather Review*, March, 1927), the results indicating that close study of the occurrence of the different thunderstorm types will make it possible to forecast the degree of fire hazard with increasing success. E. F. McCarthy of the Forest Service, studying the inflammability of forest litter in the southern Appalachians (*M.W.R.*, March, 1927) points out that "after the fall of the new litter a fire hazard can be created through the agency of sun, wind, and low relative humidity on south exposures in a single day following heavy precipitation." The force of this statement lies in the fact that distinctly dangerous conditions so regularly follow a shift of wind into the northwest after a storm that the fire hazard can be predicted with more certainty than can precipitation.

Solar Radiation.—An invaluable summary of solar radiation measurement the world over was completed by H. H. Kimball of the Weather Bureau (*M.W.R.*, April, 1927), and presented in the form of curves, extensive tables, source lists, etc.

Weather Records.—Of great importance for students of secular variations of atmospheric phenomena in connection with sunspot changes is the Smithsonian Institution's compilation of "World Weather Records," (*Smiths. Misc. Coll.*, vol. 79) under the editorship of H. H. Clayton, with foreign meteorologists cooperating, giving monthly temperature, pressure and precipitation for some 385 fairly evenly distributed stations, together with sunspot data for the years 1749 to 1925 inclusive. The usefulness of the work will extend far beyond its immediate purpose.

Literature.—A noteworthy contribution to the statistical literature of climatology is W. W. Reed's "Climatological Data for the Tropical Islands of the Pacific" (*Monthly Weather Review*, Suppl. no. 28). Here are assembled, mostly in the form of monthly and annual means and extremes, data from every source available in the great library of the Weather Bureau touching the region, a body of information which would otherwise be all but inaccessible to the layman.

The International Aerological Soundings at Royal Center, Ind., in May, 1926, yielded a body of data forming the basis of a study (*M.W.R.*, July, 1927) by L. T. Samuels on the day-to-day changes in the upper air; Mr. S. P. Fergusson discusses in the same connection the instruments and technique employed.

W. van Royen contributed from the Geographical Laboratory of Clark University an interpretation of the climatic regions of eastern North America north of the Rio Grande, basing his work on Köppen's criteria involving the presence or absence of rest periods for vegetation, the duration of growth periods, etc.

Of practical importance to market gardeners are the findings by A. W. Cook (Weather Bureau), in his study of "The Protection of Strawberries from Frost through Artificial Heating." One striking conclusion deduced was that a plot artificially heated yielded seven times as large a berry crop as an unheated plot of the same size.

TERRESTRIAL MAGNETISM

TERRESTRIAL MAGNETISM

BY DANIEL L. HAZARD

U. S. COAST AND GEODETIC SURVEY

MAGNETIC SURVEYS

During the past year the field work of the United States Coast and Geodetic Survey in the magnetic survey of the United States was devoted primarily to the reoccupation of selected stations from New Mexico to Michigan for the determination of the change of the earth's magnetism with time, in continuation of the program which provides for the occupation of such repeat stations in all parts of the country at intervals of about five years. Incidentally some old stations which had become unsuitable for magnetic observations were replaced by new ones to meet the needs of local surveyors.

Declination observations were made at many triangulation stations in Alaska and the Philippine Islands and a detailed declination survey of Oahu Island, Hawaii, was completed. The surveyors of the Topographical Survey of Canada occupied about 1000 stations for declination, a few for inclination, and intensity, and many for repeat observations; meridian lines were established, especially in the eastern part of the country. Many observations were made in the new mining areas in Northern Ontario. Under the direction of the Dominion Observatory observations for secular change were made at 62 stations in the section of the country west of longitude 98° and south of latitude 56° . Ten stations were occupied along the north shore of Lake Erie between Port Dover and Port Maitland to determine the extent of local attraction in that locality.

The Department of Terrestrial Magnetism of the Carnegie Institution of Washington had but one party in the field, engaged in the occupation of repeat stations along the west coast of Africa from Morocco to Cape Town, with side trips into the interior by such routes as were available. The practice was continued of

making observations in greater detail at selected stations, for the purpose of getting an idea of the diurnal variation of the earth's magnetism in parts of the world where there are no magnetic observatories. The *Carnegie* was given a thorough overhauling preparatory to an early start in 1928 on a three years' cruise with an enlarged program of oceanographic work in addition to the regular observations of terrestrial magnetism and atmospheric electricity. The plans for the cruise provide for frequent crossings of the tracks of previous cruises so that secular change data will be secured in all oceans. The G. P. Putnam Baffin Bay Expedition included magnetic observations in its program of work.

MAGNETIC OBSERVATORIES

Continuous photographic records of the variations of the earth's magnetism have been made at observatories maintained by the United States Coast and Geodetic Survey at Cheltenham, Md., Tucson, Ariz., Sitka, Alaska, Honolulu, Hawaii, and San Juan, Porto Rico; by Canada at Agincourt near Toronto and at Meannook, Alberta; by the Department of Terrestrial Magnetism of the Carnegie Institution of Washington at Watheroo, West Australia, and at Huancayo, Peru. That department also cooperated with New Zealand in the maintenance of the observatory at Apia, Samoa.

INVESTIGATIONS

During the year there has been a notable increase of activity in the study of the use of geophysical methods in the investigation of underground geological formations, particularly in the location of oil and magnetic iron ore. Many of the large oil companies are now trying to develop magnetic and electric methods of locating salt domes to supplement the seismograph and torsion balance, which have been used with consider-

able success for some time. The Michigan School of Mines is carrying on field experiments to determine to what extent magnetic and electric methods may be used in locating and developing iron ore deposits, and the Colorado School of Mines has established a department of geophysics which contemplates experimental field work in connection with the work in the class-room. The annual meeting of the Section of Terrestrial Magnetism and Electricity of the American Geophysical Union was devoted to a symposium on the relation of radio transmission to solar activity, magnetic storms, auroral displays, atmospheric electricity and earth currents.

Various phases of the correlation of these allied phenomena are being studied by the Mount Wilson Observatory, Dr. G. W. Pickard, Department of Terrestrial Magnetism of the Carnegie Institution of Washington, American Telegraph and Telephone Company, General Electric Company and others. The International Geodetic and Geophysical Union held its triennial meeting at Prague, Czechoslovakia in September. The Section of Terrestrial Magnetism and Electricity discussed various proposed ways for securing greater uniformity in the reduction and publication of observatory results, provided for a practical test of various suggested measures of the magnetic activity of the earth and for securing more accurate data for the study of sudden commencements of magnetic storms, to determine whether such a storm begins simultaneously all over the earth or, if it has a definite starting point, in what manner and with what velocity it is propagated.

INSTRUMENTS

At the Prague meeting Dr. La Cour reported that he had developed an instrument for measuring directly the vertical intensity, which is being used at the observatory at Godhavn, Greenland. The Coast and Geodetic Survey and the Department of Terrestrial Magnetism have devoted much effort to the improvement of the instruments for recording the variations of the earth's magnetism, in order to secure greater stability and more accurate time control. With temperature compensation and more frequent scale value determinations by means of Helmholtz-Gauguin coils it is expected that more accurate results will be obtained with much less time required for the computations.

PUBLICATIONS

Volume VI of the *Researches of the Department of Terrestrial Magnetism of the Carnegie Institution of Washington* contains the *Results of Magnetic Observations at Land Stations from 1921 to 1926* and the *Magnetic, Atmospheric Electric, and Auroral Results of the Mand Expedition, 1918-1925*. The *Results of the Magnetic Observations at the Watheroo Observatory for the eight years 1919-1926* are nearly ready for publication. The Coast and Geodetic Survey has published the *Results of Observations made at the Cheltenham magnetic observatory in 1923 and 1924* (Serial No. 394), the *Results of Magnetic Observations made in the field in 1926* (Serial No. 393), and *Magnetic Declination in California and Nevada in 1927* (Serial No. 396). The Topographical Survey of Canada has issued a new magnetic declination map of Canada for 1927.

ECONOMIC GEOGRAPHY

By W. ELMER EKBLAW

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THE FIELD OF ECONOMIC GEOGRAPHY

Research and Surveys.—The field of economic geography has been de-

veloped the past year faster than ever before in this country. Extensive projects involving research and study have been proposed and

begun; surveys of small areas, of great regions, of industries, of resources, of land use and of many other fields have been planned, are under way or have been completed.

Want of Trained Workers.—Internal and international problems involving the data of geography await solution—and trained workers are all too few! This is due in large part to the tardiness of American industry in utilizing the geographer for developing to the best advantage the natural resources of the country. In Great Britain, Japan, and much of Europe, the geographer is employed as successfully as any other trained expert in developing resources, converting them into merchantable goods, and finding the best market for them.

Geographer's Aid Needed.—The fundamental knowledge and training of the geographer is needed in the solution of many pressing political and economic problems. He should aid much more frequently than is now the case, in formulating the programs for an intelligent utilization of the nation's resources, in developing the methods of transportation and marketing, in planning roads, cities, and ports, and in formulating foreign policies. He should be working with the geologist, the biologist, the economist, the farm and mill manager, the banker and the statesman, in maintaining and extending the prestige and influence of United States business, commerce, and politics, the more effectively to serve the people's needs.

AGRICULTURE

Economic Conditions.—The year has been characterized by the urgent demand of the farmers upon Congress for alleviation of the burden imposed upon them by the unfavorable economic conditions arising from post war readjustments. The McNary-Haugen Bill, and others having the same purpose have been before Congress but have been rejected as being unsafe remedies for the farmers' troubles. The contraction of area devoted to crop production, the curtailment of reclamation projects, the decrease in the number of farms and

farmers in most sections, and the general unrest and dissatisfaction in this fundamental industry indicate how profound and extensive are these unfavorable conditions.

Need of Surveys.—In no industry perhaps is the need more urgent for exhaustive surveys by competent men. The Department of Agriculture, similar departments in the several state governments, and the agricultural colleges of the country are all working faithfully in the field; and every intelligent farmer whether or not he be aware of the fact is himself an amateur regional geographer. He is a close student of his terrain, its relief, drainage, and soil; of the climate and weather of his region; of the natural vegetation, the introduced weeds, and the crops adapted to his territory. He knows something of the political system under which he works, of the economic conditions that affect his activities, and of the social obligations and privileges that accrue to his industry. He sees all these in their relationship to one another, to himself and his family, and to the community at large. In addition, he is somewhat acquainted with the essential facts of geography as they relate to his country, and he generally is as well informed as the average citizen regarding these same facts as they pertain to world relationships.

Trained Men Required.—But in agriculture, as in commerce and industry, the need grows continually greater for trained students in the specialized field of agricultural geography, workers and investigators who can assemble intelligently the great mass of facts and figures that concern agriculture in its relation to physical and economic influences, who can organize and present them clearly and forcefully, and who can apply them to the solution of social and economic problems that confront the community and the state as a whole, as well as the farm groups themselves.

Potential Resources.—No country is so richly supplied with coal and other power, with iron and copper and lead and other minerals, with adequate capital and competent la-

bor, all requisites for the development of great productive industries, as is the United States, and at the same time endowed with such great expanses of fertile soil, favorable climate, and level lands for the growth of food to feed its people, of fiber to clothe them, of wood and brick and stone to shelter them, of coal and oil and gas for fuel as well as power. To develop and utilize the land resources, wisely, to husband them conservatively, and to guard them from ruthless waste or wanton destruction, the trained agricultural geographer should be the guide for the whole people.

Agricultural Year Book.—The Book of the Department of Agriculture for 1926, is a radical departure from the yearbooks of recent years. It is not so technical, not so fully devoted to presentation of the results of basic scientific research. Whether or not such a change will add to the value of the publication is not easy to state. The volume is divided into four major parts, as follows: (1) "The Year in Agriculture," devoted to the Secretary's report summarizing the achievements of the department for the year; (2) "What's New in Agriculture," devoted to a statement of new crops introduced, education, plant diseases, economic surveys, agricultural books, etc.; (3) "Miscellaneous Lists" of agricultural colleges, experiment stations, etc.; (4) "Agricultural Statistics" of grains, fruits, and vegetables, field crops other than grain, farm animals and animal products, foreign trade of the United States in Agricultural Products, and miscellaneous agricultural statistics. An excellent index completes the volume.

Bulletins and Papers.—In addition, the department has issued numerous special bulletins and papers from its several bureaus, many of them of great geographic value. The many state departments have likewise been exceedingly active and have issued numerous excellent publications.

The International Soil Congress, convened in Washington about midsummer, was one of the outstanding agricultural meetings of the year. Representatives from all the leading

agricultural countries of the world attended. The Congress closed with an excursion through the South and the Mid-West for the purpose of studying the chief soil types of the agricultural regions.

MANUFACTURES

New Industrial Factors.—As in agriculture, so in manufacturing and mining industry, the trained geographer has become essential. The growing influence of industry upon the lives of men, and the control of activities through industrial processes, the moulding of thoughts in manifold forms of industry, and the shaping of the future by the effects of present modern industry, have introduced into geography a set of powerful factors that may not be ignored or neglected. The century just past has recorded a rapid growth and spread of industrialism, which are an earnest of the progress this century bids fair to write upon its record.

Problems of Adjustment.—That man is finding it hard to adjust himself to these modern industrial conditions is increasingly evident. He can not wait for time through slow evolution to solve his problems; industry is moving too fast. He must take most of his present, and much of his future, into his own hands, and try to hold them firm while industry works upon them, and not leave to environment the future of the race. He must know how much of the land, its relief, its climate, its resources are his to bend to his own needs. He must survey the whole field of his environment, his resources, his associate peoples.

Surveys.—The increasing number of geographic and economic surveys reveals his alertness to the problems he must solve. In the field of such surveys the industrial geographer, with his scientific attitude, his training, his technique, is peculiarly efficient. His breadth of view, his direction of approach, and his sureness of method make him invaluable. In municipal government particularly, in many great manufacturing and distributing enterprises, and in industrial crises brought on by war, or panic, or flood, or fire, the industrial

geographer has already proved his worth.

A social, economic, or political survey that ignores the influence of geographic factors—location, relief, seasons, climate and weather, for instance—must be somewhat superficial; with the help of an industrial geographer to define the bases upon which all human activities, including industry, rest, the foundation should be substantially laid.

Foreign Markets and Policies.—Manufacturers are looking more and more for foreign markets. By quantity production and the employment of great amounts of capital and machine labor they are able to compete successfully with the cheap man labor of the Orient, and the highly organized and efficient industry of western Europe, particularly in such wares as are made from domestic raw materials. The export of manufactured goods is rapidly increasing, whereas the export of agricultural products has relatively decreased. As a consequence the whole foreign policy of the United States is being modified to meet the changed condition of the time.

TRADE AND TRANSPORTATION

Geographer's Function.—Not less in trade and transportation than in agriculture and manufacturing industry the trained geographer is indispensable. If American relationships with other countries are to attain economic and political permanence, the geographer, versed in the lore of trade and transportation, as well as in the physical conditions affecting them, and in the attributes of foreign peoples, will play an important part in foreign trade and commerce. To avoid mistakes that may adversely affect friendly intercourse between the nations, importers as well as exporters, international banking concerns as well as transportation companies, and the diplomatic service as well as manufacturers, will engage the expert geographer to help them plan and execute their programs.

Latin-American Relations.—In no field of foreign trade is there the pos-

sibility of such far-reaching and momentous results as in the trade with Central and South America. It would be a rash guess to predict what the final outcome of the growing commerce, the closer and friendlier trade connection between the republics of South and Central America, and the United States will be. Certainly the prospect of a Pan-American rapprochement that shall be more beneficial to all concerned with each passing year as it has been for the past decade, grows continually brighter. It is to the promotion of such close and effective association in trade and commerce that the commercial geographer can devote his energies most advantageously.

Department of Commerce.—Great interest has been evinced in the United States in the development of its trade and its transportation problems. An adequate merchant marine, subsidized by the government continued to be advocated. The encouragement of shipping has become a prominent part of the activities of the Department of Commerce. This department is rapidly becoming one of the most important and valuable branches of the United States government. Its studies of commodities, their production, distribution and use; of the economic situation of the nations of the earth; of the potentialities and possibilities of the several regions;—these and hundreds of others are being vigorously prosecuted by the department, and scores of valuable publications are being issued. The Trade Information Bulletins are rich in data of importance.

PUBLICATIONS

For general purposes, no magazine is more useful than *Economic Geography* which is the only publication of its kind in America. Scattered articles of interest in the field are being published in numerous magazines. The many publications of the Departments of Agriculture and Commerce are fundamental to the study of problems in *Economic Geography*. The number of books being issued on the subject and related subjects is legion.

CARTOGRAPHY

By W. L. G. JOERG

EDITOR, RESEARCH SERIES, AMERICAN GEOGRAPHICAL SOCIETY

New Sheet of United States Millionth Map.—The outstanding event of the year in American cartography is the publication of the "Hudson River" sheet (North K-18) of the United States portion of the International Map of the World on the scale of 1:1,000,000. It is no exaggeration to say that this sheet represents—and this involves the representation of relief—the first adequate general map of the important area shown, which extends from latitude 44° to 40° N. and from longitude 78° to 72° W. This area embraces New England, New York, Pennsylvania, and New Jersey, west of Lake Sunapee, east of Rochester, south of Watertown, and north of Philadelphia, and is estimated to be the home of 20,000,000 people, or 19 per cent of the 1920 population of the United States.

That this is the first adequate map may seem surprising. But with regard to maps of our own country we are in a position that is betwixt and between—on the one hand in the large-scale topographic sheets of the U. S. Geological Survey based on original surveys we have an admirable map of this fundamental type, and on the other, we are far behind European countries in our lack of wholly satisfactory general maps of our own domain and even behind relatively backward countries whose present and potential resources lead to the cartographic representations of their territory on general scales by agencies in foreign countries interested in their exploitation. In Europe general maps are usually produced by private map-publishing firms with a scientifically trained personnel. Our corresponding organizations have not yet reached that stage of development, for which reason it is all the more fortunate that a Government bureau has taken over this function.

Relief is shown in green and brown tints bounded by the following con-

ours: 0, 100, 200, 300, 400, 500, 600, 1,000, 1,200 meters. This relatively small contour interval leads to a finely modeled rendering of relief, especially in the case of the dissected Appalachian Plateau, with its culminating elevations in north-central Pennsylvania and the Catskills, and of the Adirondacks and the Taconic and Green Mountain axis.

International Map of the World.—Since the last discussion of this undertaking in the *AMERICAN YEAR BOOK* (1925, p. 878) the progress reports for 1925 and 1926, each with an index map, have been issued by the Central Bureau in Southampton and the following 14 sheets, all in the northern hemisphere, have been published in addition to the Hudson River sheet already described: in Europe, Q-32-33 (Bodö), P-30 (Shetland Islands), the French portion only of K-30 (Pau, otherwise Madrid), K-31 (Pyrénées Orientales), and M-32 (Strasbourg, otherwise München), M-32 (Wien), N-34 (Warszawa); in Africa, J-32 (Tunis); in Asia, D-38 (Aden), F-38 (Laila), H-38 (Basra), I-41 (Herat), H-43 (Delhi), G-43 (Rajputana). Distinctively new among these sheets in that they afford a better representation of a given area than hitherto available are the three sheets relating to Arabia, which respectively cover the southwestern corner (Aden), a section of the central desert (Laila), and the head of the Persian Gulf (Basra).

Airway Strip Maps.—The program of publishing maps of air routes in the United States, whose inception by the Army Air Service was referred to in the *AMERICAN YEAR BOOK* for 1925 (p. 879), has been expanded and taken over by the Aeronautics Branch of the Department of Commerce. Three practically non-overlapping series on the scale of 1:500,000 are in progress, designated respectively according to the govern-

AMERICAN EXPLORATION

ment agency in which they originated: the Department of Commerce series, the Air Corps-Engineers series, the Hydrographic Office series. The first is to comprise 37 sheets (one sheet has appeared) along interior routes not covered by the second series, viz. Montreal-New York-Atlanta-Miami, Fargo-Chicago-Buffalo-Boston, Chicago-New Orleans, Chicago-Oklahoma City-Galveston, Seattle-Salt Lake City-Los Angeles. Fifty-four sheets are projected of the second series, of which all but eight have been published, new sheets added since the 1925 AMERICAN YEAR BOOK report covering the routes Omaha-San Francisco, Norfolk-Fayetteville-Montgomery, San Diego-San Francisco, and airways radiating from Detroit to Rantoul, Ill., Pittsburgh, and Dayton. The third series will cover the Atlantic and Pacific coasts of the United States, the Pacific Coast of Mexico, and the Pacific and Caribbean coasts of Central America and the West Indies. Of 58 sheets, five have been published. The first and second series are especially valuable for their representation of relief (in altitude tints).

A general map of the United States showing air mail routes in operation and under consideration is published by the Post Office Department (edition of Nov. 15, 1927).

Land Classification Map of the Northern Great Plains.—An important publication is the land classification map of the Northern Great Plains on the scale of 1:500,000 in 8 sheets recently published by the U. S. Department of Agriculture in cooperation with the U. S. Geological Survey. The sheets cover the Great

Plains from latitude 43° north to the Canadian border, west to the foothills of the Rockies, and east to about longitude 100° W. Seven types are differentiated: farming land, farming grazing land, grazing forage land, grazing land, irrigated land, irrigable land, and non-tillable grazing land. Related maps have been published of the Canadian portion of the Great Plains by the Topographical Survey, Ottawa. These maps are not continuous, but represent individual areas in a belt extending from Lake Winnipeg to the Peace River country. Of each area there is a pair of maps, one representing soils, the other land classification. The scales are usually 3 or 4 miles to the inch.

Correlation of Nationality Distribution with Population Density.—Racial, linguistic, or nationalities maps generally are limited to representing the areal extent of ethnic groups. The important question, how closely a given group occupies its territory, is fairly represented graphically at the same time. A recent attempt to solve this difficult problem of cartographic technique is therefore of wider interest. On his ethnographic map of Europe in 1:3,000,000 published by Freytag and Berndt, Vienna, Dr. Arthur Haberlandt shows each nationality in a distinct color and different population densities within that nationality by gradational tints of that color. In all, 43 nationalities are distinguished and six grades of population density in each. In addition religious affiliation is indicated by eight different types of overprint symbols. In spite of this wealth of information the resulting picture is remarkably clear.

AMERICAN EXPLORATION

BY ROBERT M. BROWN

PROFESSOR, RHODE ISLAND COLLEGE OF EDUCATION

ATLANTIC FLIGHTS

Lindbergh.—Airplane flights across the Atlantic and Pacific were the spectacular features of 1927. While some of these were merely essays for fame, on the whole there has been

acquired considerable knowledge concerning the possibilities of air transportation. The outstanding achievement was the flight of Colonel Charles A. Lindbergh from New York to Paris on May 20-21. Lindbergh

used a Ryan NX 211 monoplane, the *Spirit of St. Louis*, equipped with a single motor and had no companion. The distance of 3,610 miles was covered in 33½ hours. Snow and sleet were encountered which made flying extremely hazardous; and similar conditions, during the attempt of Captain Charles Nungesser and Captain François Coli who left Paris for New York on May 8 and were lost in the Atlantic, probably were the cause of their failure.

The course followed by Lindbergh was determined by the earth induction compass, an instrument based on the principle of the relationship between the earth's magnetic field and the magnetic field generated by the airplane. Its action is described: when the course has been set so that the needle registers zero on the compass, any deviation would cause the needle to swing away from zero in the direction of the error. By flying the plane with the needle at an equal distance on the other side of zero and for about the same time the error had been committed, the plane would be back on her course again.

Chamberlin-Levine.—On June 4, in a Bellanca monoplane, the *Columbia*, Charles Chamberlin with Charles Levine as passenger left New York and were forced to land at Hefta, near Eisleben, Saxony, after a flight of 43 hours, covering 3,905 miles. The induction compass was reported as not operative after leaving Long Island, and the pilot was dependent on a magnetic compass which functioned indifferently.

Byrd.—On June 29, Commander Richard E. Byrd in the tri-motor Fokker airplane, *America*, with Bert Acosta, Lieutenant George O. Noville and Bernt Balchen left New York for Paris. They were forced to alight at Ver-sur-Mer on the coast of France after a flight of over 43 hours.

Schlee-Brock.—On August 27, Edward F. Schlee and William S. Brock left Harbor Grace, Newfoundland, in the monoplane, *Pride of Detroit*, in an attempt to better the record of the world fliers. After 145½ hours of flight, covering 18 days and 12,295 miles, visiting 15 cities, the plan was

abandoned at the urgent request of relatives and friends at Tokyo.

Redfern.—On August 25, Paul Redfern left Brunswick, Georgia, in the monoplane, *Port of Brunswick*, on a 4,600-mile non-stop flight to Rio de Janeiro. After leaving the United States he was not seen again.

Other Atlantic Flights.—The *Old Glory*, a single-motored Fokker monoplane, bound for Rome, left Old Orchard Beach, Maine, on September 6, with Lloyd W. Bertaud and James DeWitt Hill as pilots, with Philip A. Payne as passenger, and was lost at sea. On October 11, Ruth Elder (Mrs. Lyle Womack) with George W. Haldeman as pilot left New York in the Stinson-Detroiter monoplane, the *American Girl*, and were forced down at sea 325 miles northeast of the Azores. They were picked up by Captain Goss of the Dutch ship, *Barendrecht*.

PACIFIC FLIGHTS

The Pacific flights began on June 28, when Lieutenant Albert F. Hegenberger and Lieutenant Lester J. Maitland in a three-engined Fokker plane left Oakland, California, and reached Honolulu after 26 hours, covering a distance of 2,400 miles. The new instrument in this flight was a radio beacon. It is described thus: the beacon radio sends out radio waves from land to be intercepted by a receiving apparatus on the plane which is to "tune in on the beacon wave-length of 1,030 meters and keep the plane headed upon the course where the Morse letter T was heard at about three seconds intervals." To the North of the T zone was an N zone and to the South an A zone which would indicate deviations from the course.

On July 14, Ernest L. Smith and Emory B. Bronté left Oakland, California, and reached Molokai Island, 60 miles southeast of Honolulu after a flight of 2,348 miles in 23 hours. On August 17, the Dole air race, Oakland, California, to Honolulu for a purse of \$25,000 was won by the airplane *Woolaroc*, Arthur C. Goebel, pilot, and Lieutenant William V. Davis, navigator. The second prize was awarded to the *Aloha*, Martin Jensen, pilot, and Paul Schultzer, navigator.

This air race resulted in the loss of seven lives and instituted a protest against precipitate oceanic flights. The lost included the *Golden Eagle*, J. W. Frost and Gordon Scott; the *Miss Doran*, J. A. Pedlar, Lieutenant V. R. Knope and Miss Mildred Doran; and the search plane, the *Dallas Spirit*, Captain William P. Erwin and A. H. Eichwaldt.

POLAR EXPEDITIONS

Captain G. H. Wilkins was early in the field to continue his 1926 work in the region north of Asia, the penetration of the unknown area between the drift of the *Jeannette* and the route of the *Norge*. On March 29, in a Stinson plane with Ben Eielson, pilot, Wilkins left Point Barrow towards the northwest. After 5 hours, and a distance of 553 miles, the plane was forced down and landed without damage at 175 degrees West Longitude and 77 degrees 45 minutes North Latitude. Here a sounding was made in the Polar Sea, using a Behm echo sounding machine, and a depth recorded of 18,450 feet. This exceeds any depth taken in the Arctic and upholds Nansen's theory of a deep polar basin. On his return, the gasoline gave out 83 miles from his station at Point Barrow. The plane was abandoned and, after drifting and walking, Beechey Point was reached on April 15. A second flight was prevented by the early breaking of the ice of the Polar Sea.

Wilkins' Results.—Four questions covering the Arctic have received additional data by this flight. First, the possibility of making a safe landing by plane on the frozen sea. Some have maintained that there are scarcely any safe landings on the moving ice pack, while others aver that landings are numerous. Wilkins has maintained that there is seldom a five-mile stretch without one; and Byrd, that there are but few. Wilkins was forced to land three times; in two cases he found a safe landing at once, and, in his last landing, darkness prevented him from a selection of places and his plane was crippled.

Second, his sonic sounding makes it improbable that there is any undiscovered land in the section to the

northwest of Point Barrow. His second flight was to have been to the northeast. This sounding gave an almost decisive answer to the theory of a great unknown land area in the Arctic.

Third, the drift of the ice pack was eastward. Whether this was temporary or local is not known, but for five days this eastward drift continued (as long as Wilkins and Eielson remained) in an area where the drift is normally westward.

Fourth, Wilkins reported plenty of game, and remarks that he could have secured seals for food and fuel indefinitely had they needed it. It was planned on the second trip if they were forced to land to live by hunting until land was reached. Stefansson maintains the possibility of living on the game of the Arctic and he did it; but the general feeling was that he was fortunate.

Rawson-MacMillan.—The Rawson-MacMillan Arctic Expedition of the Field Museum left in June for 15 months of exploration and research in Labrador and Baffin Land. This expedition, financed by Frederick H. Rawson of Chicago and led by Lieutenant-Commander Donald B. MacMillan, is collecting anthropological, botanical, geological, and zoological material for the Museum, making topographical studies, and conducting other scientific research.

Putnam.—The Putnam Baffin Island Expedition of the American Museum of Natural History, under the leadership of George Palmer Putnam, left in June and returned in October. They report a bad summer in the Arctic because of fog and storms, but notwithstanding much work was accomplished. The map of Baffin Island has been remade showing considerable variations from the long-established map, a new range of mountains discovered, and Fury and Hecla straits visited. Collections representing the life and culture of the Baffin Island Eskimos were gathered.

EXPLORATION OF AIR CONDITIONS

Greenland.—The University of Michigan Greenland Expedition under the leadership of Professor William H. Hobbs continued its work

of investigating air currents and weather conditions over the Greenland ice cap. Professor Hobbs returned from his second summer on November 8, but left five of his companions at Kangerlugouak Fjord to continue their observations until next spring.

Solar Radiation.—The National Geographic Society continued during 1927 its support of the work of the Smithsonian Institution in the investigation of the relationship between solar radiation and weather fluctuations which promises results of the utmost importance by making possible accurate long-range weather forecasting by continued contributions for the maintenance of the Mt. Brukaros Solar Observatory in southwest Africa. The year's work at this observatory, in conjunction with the observations in Arizona and Chile, tend to emphasize the relationship maintained by Dr. S. P. Langley and Dr. Charles G. Abbot. A definite periodicity of solar variation of 25½ months has been found which corresponds strikingly with the cycle of weather variations. It is likewise asserted that static conditions have been shown to be dependent on solar radiation, and long-range forecasts of radio reception conditions may be a by-product of the solar radiation investigation.

The American Geographical Society has since 1925 maintained a weather station at Trujillo, Peru, in the interest of the Society's studies of the climate of the west coast of South America.

AMERICAN GEOGRAPHICAL SOCIETY

In Central Peru.—An expedition from this society under the leadership of O. M. Miller left New York in June for Central Peru to explore and map the sources of the Marañon River, a large tributary of the Amazon, and a large section of the vast forested region which lies along the eastern border of the Andes between the Upper Marañon and the Ucayali River. Mr. Miller has reported already that the first part of the work,—the survey of the chain of lakes that form the source of Marañon River—has been completed. In 1909,

a German geographer, Sievers, visited and described a group of lakes and the survey of the Intercontinental Railway Commission in the nineties and crossed the lowermost of them. Mostly the entire area is unknown. In addition, Mr. Miller has surveyed an area of about 1,500 square kilometers and collected a large number of photographs and moving pictures. Many new lakes and streams have been located as well as human habitations previously unknown. The work of the expedition will form one of the series of the International Map of the World on the scale of 1 : 1,000,000.

Ecuador.—Mr. Joseph H. Sinclair and Mrs. Sinclair left for Ecuador in August to continue explorations in the Oriente region of Ecuador, begun by Mr. Sinclair and Mr. Theron Wasson in 1921. The Sinclairs will follow the old route of Pizarro on his ill-fated expedition in 1541, map the region about the volcano Sumaco, discovered during the previous expedition, and traverse the Napo River valley and unknown territory to Quito.

NATIONAL GEOGRAPHIC SOCIETY

Alaska.—Dr. Thomas A. Jaggar made a reconnaissance of the Pavlof volcano region of the Alaskan Peninsula, for the purpose of determining the advisability of a close study of the volcanic phenomena. The report was favorable and as a result the Society made a grant of \$10,000 from its funds for an expedition to study the activities of the Pavlof group and the related phenomena of the region. This work will be undertaken during 1928. The results of these investigations, coupled with the data collected by the several expeditions to Mt. Katmai, under the leadership of Dr. Robert F. Griggs, will probably shed new light on the strange processes of volcanic activity and its relation to earthquakes.

New Mexico.—Dr. Neil M. Judd led the eighth and final expedition of the Society into the Chaco Canyon country of New Mexico for the finishing studies of the apartment-house type of civilization he found at Pueblo Bonito, and its correlation

with the preceding civilizations of the Basket Makers, the Pottery Makers, and the Slab House Builders.

Byrd Grant.—The Society in furtherance of polar exploration has made a grant of \$25,000 from its research fund to Commander Richard E. Byrd for his forthcoming adventure into the Antarctic Continent; and also in the encouragement of exploration and research, the Society awarded the Hubbard Gold Medal, presented to those who have performed outstanding achievements in the field of geography, to Colonel Charles A. Lindbergh.

FIELD MUSEUM OF NATURAL HISTORY

Abyssinia.—In addition to the Rawson-MacMillan Arctic Expedition, the Field Museum had many parties in the field during 1927 largely for the collection of specimens. The Field Museum-Chicago Daily News Abyssinian Expedition which set out in 1926 returned in May, 1927. Approximately 3,500 mammals, birds, fishes, and reptiles, many of them rare species, were collected. The expedition was financed by the Chicago Daily News, and led by Dr. Wilfred H. Osgood.

Alaska.—The John Borden-Field Museum Alaska Expedition, from May to September, obtained a representative collection of land and sea mammals of Alaska and the neighboring islands, many birds of the region, and a collection of Eskimo ethnological material. The expedition was financed and led by John Borden.

Mesopotamia. — Resumption of work, carried on during five previous years, of the Field Museum-Oxford University Joint Expedition to Mesopotamia, resulted this year in the excavation of the ancient Sumerian temple of the Earth Goddess of Harsagklemma, built more than 5,000 years ago, at the site of the buried city of Kish.

Tanganyika.—After more than a year in Central Africa, the Conover-Everard Expedition to Tanganyika Territory returned in June, 1927. The expedition collected approximately 600 mammals, 1,500 birds, and 300

reptiles. The expedition was financed and led by H. B. Conover; and R. H. Everard was an associate.

Brazil.—The Captain Marshall Field Brazilian Expedition, which left Chicago in June, 1926, ended in October, 1927. This was a collecting expedition under the leadership of Mr. George K. Cherrie. The Captain Marshall Field Paleontological Expedition in Argentina and Bolivia also returned in October. The itinerary included seven months collecting of fossil mammals in the Providence of Catamarca and a somewhat shorter period of similar work in the Province of Buenos Aires. Captain Marshall Field was sponsor for an expedition which collected mammals in India, in charge of Colonel J. C. Faunthorpe, and a botanical expedition in South America in charge of Dr. A. Weberbauer of Lima, Peru.

Madagascar.—The Captain Marshall Anthropological Expedition to Madagascar, in charge of Dr. Ralph Linton, is obtaining much new information concerning the various tribes of the island, and valuable collections illustrating their cultures. The expedition set out in December, 1925, and it is planned to return before the close of 1927.

OTHER EXPEDITIONS

Africa.—The American Museum of Natural History have had three parties in the field in Africa. The Taylor-Sudan expedition under Harold E. Anthony collected birds and mammals along the Blue and White Nile. The Ruwenzori-Kivu expedition headed by Dr. James Chapin, DeWitt L. Sage and F. P. Matthews, will collect birds of subtropical Africa, and North Africa will be visited by George C. Valiant, archeologist.

Miscellaneous.—In addition George H. Tate and T. Donald Carter visited Roraima, a mountain in Venezuela, for the purpose of collecting birds and mammals.

On November 16, 1926, Carl Akeley died in the Belgian Congo, where he had been collecting specimens for the American Museum of Natural History.

Dr. William Beebe of the department of tropical research of the New

XX. PHYSICAL SCIENCES

York Zoological Society left on December 28, 1926, on his tenth expedition. His work this year has been in and about Haiti.

SCIENTIFIC CONCLUSIONS

Changed Conditions.—The field of exploration has broadened during recent years. Little new land is left for the explorer. The general conditions of the distribution of land and water are known. There is left the detail to fill in. Years ago where one or more daring adventurers set out in quest of the unknown, now we can record hundreds who are seeking out with great care the histories of the past and the conditions of the present. The spectacular phases of exploration will always attract the most attention but one must be mindful that, frequently, the quiet and unheralded explorer is probably adding much to the sum of human knowledge. The boundary line between ex-

ploration and research cannot be drawn; in many cases they are the same thing.

Purpose vs. Stunts.—The year 1927 demonstrated very clearly that the thoughtful person does not look with approval on feats of daring in the field of exploration unless they are incidental to some high purpose. This was best illustrated in the protest against so-called "stunt" flying. In most lines of exploration the pathfinder hardly accomplishes more than to show the possibilities of travel and the way. When this is done others follow as students of the mode of travel and the conditions of the route, until the path of the adventurer becomes the commonplace route of travel and trade. In the field of aviation, the year 1928 will probably accomplish much, but this we should have learned from the record of 1927, that this is a field of investigation and not a playground yet.

COGNATE SOCIETIES

AMERICAN GEOGRAPHICAL SOCIETY.—
Broadway at 156th St., New York,
N. Y.

ASSOCIATION OF AMERICAN GEOGRAPHERS.

EXPLORERS CLUB.—47 W. 76th St.,
New York, N. Y.

GEOLOGICAL SOCIETY OF AMERICA.—
Columbia University, New York, N. Y.

HARVARD TRAVELLERS CLUB.—Harvard Club, Boston, Mass.

NATIONAL GEOGRAPHIC SOCIETY.—
Washington, D. C.

SOCIETY OF ECONOMIC GEOLOGISTS.

DIVISION XXI

CHEMISTRY AND PHYSICS

INORGANIC AND PHYSICAL CHEMISTRY

BY HUGH S. TAYLOR

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RECENTLY DISCOVERED ELEMENTS

Illinium.—During 1927 no new elements have been discovered but additional data on the more recently discovered elements have become available. The element No. 61, Illinium, announced in 1926 has evidently been sought in a number of different laboratories throughout the world, more especially in Italy by Rolla and Fernandes, who claim priority of discovery and hence the right to name the element for which they suggest the name, Florentium. This issue has been the subject of a good deal of discussion (*Naturwiss.* 14, 771, 1926; *Z. angew. Chem.*, 39, 897, 1926; *Chem. Ztg.*, 50, 990, 1926; *Gazz. Chem.*, 56, 435, 688, 692, 1926; *Science* 65, 160, 1927). The evidence for the element still rests upon the X-ray method of identification.

Rhenium.—Of the elements Nos. 43 and 75, whose discovery was announced in 1925 by Noddack and Tacke and of which additional indications were suggested by other workers in 1926, further data are now available concerning No. 75 to which the name Rhenium (symbol, Re) was given. This has been the object of an amazingly thorough and painstaking research by Ida and Walter Noddack (summarized in *Ergebnisse der Exakten Naturwissenschaften*, Vol. 6, pp. 334–372, 1927). They have investigated in all some seventeen different minerals, principally platinum minerals and those of the rare earths containing yttrium, zirconium, thorium, niobium, tantalum, titanium, molybdenum, and tungsten. Their maximum

yields were obtained in a platinum mineral from Russia and a Gadolinite from Iveland, Norway. The Rhenium content of these is extremely small and reaches in the best samples 11×10^{-7} per cent. This demanded an extraordinary laborious technique to yield in all about 1.6 mg. of substantially pure Rhenium oxide Re_2O_7 .

From the methods of separation the following chemical properties can be deduced: a sulphide reducible in hydrogen to give a heavy black powder (possibly the metal or lower sulphide); this powder burns in oxygen to give an oxide which volatilizes with heat giving a yellowish white crystalline deposit. In sulphuretted hydrogen this changes to a gray sulphide, also oxidizable in oxygen to reform the oxide. The latter is soluble in dilute hydrochloric acid to form a colorless solution which is not precipitated either by alkalis or sulphuric acid. The sulphide is soluble in ammonium sulphide and in soluble dilute acids. The rhenium can be extracted from the hydrochloric acid solution by means of ether. It is separable from molybdenum by the insolubility of its sulpho-cyanide in ether in contrast to the solubility of the molybdenum salt. This is a striking list of properties discovered with only 1.6 mg. yet available. The physical properties known are still essentially only the wave lengths of the L_α and L_β lines of the Röntgen spectrogram.

Elements in the Atomic State.—Within the last year, by physical methods of study (analysis of absorp-

tion spectra), the energies required to dissociate molecules into atoms have been determined with precision (Sponer, *Z. Physik*, *41*, 611 (1927); *Proc. Nat. Acad. Sci. (U.S.A.)* *13*, 100 (1927); *Erg. Exakt. Naturwiss.* *6*, 75* (1927)). Hydrogen requires 101,000 cal., oxygen, 162,000 cal., nitrogen, 265,000 cal., carbon monoxide, 258,000 cal., nitric oxide, 182,000 cal., chlorine, 58,500 cal., etc. These data, together with those for molecules such as NaCl, KBr, KCl, CsI, KI, NaI, etc., (Franck and Kuhn, *Z. Physik*, *43*, 164 (1927) are extending considerably our knowledge of the energies involved in the atomic linkages of molecules.

NITROGEN AND OXYGEN

Active Nitrogen.—A considerable discussion still centers around active nitrogen as to whether it is atomic or merely a molecule in a low state of excitation. The most recent view is that there are two types of nitrogen in active nitrogen, (a) atomic and (b) chemically active nitrogen, the latter having only some 45,000 calories more energy than normal nitrogen (Willey, *J. Chem. Soc.*, *131*, p. 2331 (1927)). This duality would explain certain contradictory observations on the basis of a single form. The atomic nitrogen on this dual idea would account for the luminescence.

Atomic Hydrogen.—A brief report (Bischowsky, *Nature*, Nov., 1927) indicates that atomic oxygen may be withdrawn from the center of a large discharge tube by a method first used by Wood to produce atomic hydrogen (*Proc. Roy. Soc.*, *102A*, 1, 1923). A comprehensive review of the present status of the atomic hydrogen problem has been given by Bonhoeffer (*Erg. Exakt. Naturwiss.* *6*, 201, 1927).

UNIMOLECULAR REACTIONS

The existence and explanation of unimolecular reactions still occupies an important place in the field of physical chemistry. The number of apparent unimolecular reactions is steadily increasing. Smith showed the racemization of pinene to be unimolecular (*J. Am. Chem. Soc.*, *49*, 43, 1927). Hinshelwood and Askey have added others from the organic decom-

positions (*Proc. Roy. Soc.*, *114A*, 84; *115A*, 215, 1927). Ramsperger has studied the decomposition of azo methane and azo propane (*J. Am. Chem. Soc.*, *49*, 912, 1927; *Proc. Nat. Acad.*, *13*, 849, 1927). This latter shares with nitrogen pentoxide (Hibben, *Proc. Nat. Acad. Sci.*, *13*, 626, 1927) a distinction from the others in that they both are unimolecular down to very low pressures.

Both radiation and collisions have been suggested to account for the decomposition. In the case of pinene, however, the former has been experimentally demonstrated as impossible by the important research of G. N. Lewis and Mayer (*Proc. Nat. Acad. Sci.* *13*, 623, 1927). These authors heated a molecular beam of pinene in which collisions were avoided by giving the molecules a unidirectional motion. Such a beam when subjected to large amounts of radiation showed no racemization. There is still a possibility that radiation may be effective with nitrogen pentoxide and azo-propate since the experimental results with these gases cannot be brought into harmony with present ideas as to the function of collisions in producing apparent unimolecular reactions.

THEORIES OF SOLUTION

Comprehensive discussions of the modern theories of solution, especially that of Debye and Hückel, have this year been held in America (*Trans. Am. Electrochem. Soc.*, April, 1927) and in England (*Trans. Farad. Soc.*, *33*, 1927) while a point of view unfavorable to the Debye-Hückel theory has been developed in Germany by Nernst and his pupils (See Orthmann, *Erg. Exakt. Naturwiss.* *6*, 155, 1927). Bjerrum has developed a theory of ion-association as an improvement of the Debye-Hückel theory (*Z. Physik. Chem.* *119*, 145, 1926; *Trans. Farad. Soc.*, loc. cit.) and has attempted to calculate the degree of association as a function of the ion radius. Kramers (K. Akad. Wetens. Amst. *30*, 145, 1927) with the help of statistical mechanics has determined the limits of applicability of the Debye-Hückel theory and concludes that the method used by these latter of correcting for

ion-radius at high pressures is not permissible.

Nernst and his co-workers (Ber. Berl. Akad., 51, 1926; 136, 1927; Z. Elektrochem. 1927) from measurements of heats of dilution in very dilute solutions and from the temperature coefficients of the same, conclude that some form of undissociated molecule or of ion-association must be present in solutions of certain typical strong electrolytes. The net conclusion seems to be that some middle position between the classical theory of Arrhenius and, on the other hand, complete dissociation will be reached. The treatment of electrical conductivity of strong electrolytes from the newer standpoint has been considerably improved by the work of Onsager (Physik. Z., 27, 388, 1926; 28, 277, 1927).

ADSORPTION

Renewed attention is being given to theories of adsorption. The point of view developed by Polanyi and Berenyi several years ago (Z. Elektrochem., 27, 143, 1921) is shown by Lowry and Olmstead (J. Phys. Chem., 31, 1601, 1927) to be applicable to a wide variety of charcoals and a wide variation in observations on the adsorption of carbon dioxide by this substance. The theory postulates a definite adsorption potential between adsorbent and adsorbate and does not restrict adsorption to a definite unimolecular layer. Frazer, Patrick and Smith (J. Phys. Chem., 31, 897, 1927) show that, on freshly produced glass surfaces, adsorption is definitely less than unimolecular, and that treatment with solvents or cleansing agents leads to much higher adsorptions.

The heat of adsorption also is receiving experimental study. Abnormal results have been obtained by Taylor and Kistiakowsky (Z. Physik. Chem., 125, 341, 1927) with hydrogen on copper and by Garner and McKie (J. Chem. Soc., 131, 2451, 1927) with oxygen on charcoal. These authors both show an initial rise in the heat of adsorption with increase of adsorption, instead of the constant fall in value which thermodynamic theory would demand. This

points to some variation in the nature of the molecular state as between the gas phase and the adsorption layer. The former authors postulate dissociation into atoms at the surface, the latter a variation in the nature of the oxygen-carbon linkage. Kistiakowsky, Florsdorf and Taylor (J. Am. Chem. Soc., 49, 2200, 1927) show that it is the properties of the adsorbing surface which determine the extent of the abnormality in the heat of adsorption data.

PHASE RULE STUDIES AND EQUILIBRIUM

The systematic elucidation of equilibrium conditions in aqueous solutions proceeds steadily. Such important systems as $K_2CO_3-Na_2CO_3-H_2O$; $NaHCO_3-Na_2CO_3-H_2O$, $KHCO_3-K_2CO_3-H_2O$ have been studied by Hill and his co-workers with fruitful results (J. Am. Chem. Soc. 49, 669, 967, 2487, 1927). The preparation of pure zinc hydroxide and its equilibrium with ammonia and sodium hydroxide solutions have been studied by Districh and Johnston (J. Am. Chem. Soc., 49, 1419, 1927). The equilibrium in the systems $ZnO-H_2$ and $ZnO-CO$ have been thoroughly studied and have yielded a very complete entropy investigation of an important industrial problem, the metallurgy of zinc (Maier and Ralston, J. Am. Chem. Soc., 48, 364, 1926; 49, 3189, 1927; Parks, Hablutzel and Webster, J. Am. Chem. Soc., 49, 2792, 1927). These must suffice as examples.

INHIBITION OF CHEMICAL REACTIONS

A series of very important contributions not only to the problem of inhibition or negative catalysis but also to the general problem of the intimate mechanism of chemical reactions generally has appeared during 1927 from Bäckström (J. Am. Chem. Soc., 49, 1460, 1927; Medd. Vetens. Akad. Nobel Inst., 6, Nos. 6 and 16, 1927). The retarding effects of very small amounts of chemical materials on the rates of certain reactions have been intensively studied recently, since they are of great technical importance in the preservation

and prevention of deterioration of a variety of substances. Rubber, artificial leather, transformer oils and vegetable fats are among the technically interesting materials whose deterioration can be prevented by addition of inhibitors. On the pure chemical side similar effects are to be noted in the oxidation of aldehydes and sulphites.

Bäckström has submitted to experimental test the theory first offered by Christiansen (*J. Phys. Chem.*, 28, 145, 1924) to account for such inhibition. According to this theory, inhibition is to be associated with chemical reactions showing what is now known as a chain mechanism. That is to say, the energy of an individual reaction between two molecules is, in some manner, handed on to other molecules of reactant, permitting their activation and therefore reaction, a process which thereupon repeats itself.

According to Christiansen, the inhibitor acts by breaking the sequence of these chains of reaction, in some manner dissipating the energy which would be communicated to molecules of reactants. Bäckström has now established this explanation experimentally by showing that all such inhibited reactions are also photo-sensitive and that the photo-chemical reactions have this chain-mechanism characteristic. Thus, he shows that, in the oxidation of benzaldehyde, the absorption of one quantum of light energy may lead to the oxidation of as many as 10,000 molecules of the aldehyde. The quantum initially absorbed produces the primary activation and reaction, which initial process is then succeeded, in the particular case, by as many as 10,000 subsequent reactions the energy of activa-

tion of which is provided by the initial reaction. In presence of inhibitors the quantum yield falls rapidly below 10,000. The same was shown for other aldehydes and, in the case of the oxidation of aqueous sodium sulphite, as many as 50,000 molecules were caused to react per quantum of absorbed light energy.

A more detailed study of these reactions showed that the oxidation proceeds through a peroxide stage and that even this stage in the process partakes of the chain mechanism characteristic of the total process. Thus, the formation of benzo-per-acid from benzaldehyde and oxygen occurs to the extent of 10,000 molecules per light quantum absorbed. In a very penetrating analysis of the whole problem, Bäckström shows that the possibility of chain mechanisms provides an explanation for the existence of chemi-luminescence in such auto-oxidation processes. The energy present in a newly formed molecule of the oxidation product is often sufficient, when transferred to a molecule of the auto-oxidizable substance, to cause the latter to be excited to such a level of energy that it may emit light in the emission of this energy content. This study of inhibition leads therefore directly to the enormously important problem of the emission of light during chemical processes, so important in the burning of phosphorus, and in various luminescences in bacteria and animal life. It is known from a variety of researches, especially those of E. N. Harvey at Princeton that the luminous processes of fire-flies and the like are due to processes of oxidation. The whole problem has opened up avenues of investigation rich in potentialities.

ORGANIC CHEMISTRY

By CHARLES D. HURD

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ADVANCES IN COMMERCIAL PRODUCTS

Petroleum.—One of the most significant recent advances in organic

chemistry is the utilization of petroleum as a raw material for aliphatic organic chemicals. This is still largely in the experimental stage,

but petroleum now gives two new products on a commercial scale. From casing-head gasoline (pentane fraction), by chlorination under pressure to amyl chloride followed by hydrolysis with sodium hydroxide solution, an amyl alcohol mixture is produced to the extent of 100,000 gals. per month. The three primary pentyl alcohols related to *n*- or *iso*-pentane comprise about $\frac{3}{4}$ of this mixture, and the two secondary alcohols, pentanol -2 and -3, comprise the remainder. Large scale uses for both the alcohol and the corresponding acetate have been found as solvents in pyroxylin lacquers. "Aldehol," a denaturant to replace pyridine, is prepared by oxidizing kerosene.

Anti-knock studies on pure hydrocarbons, particularly by Edgar and co-workers, have revealed that pure normal hydrocarbons (*n*-heptane) give much more violent knocking than gasoline itself, and that some of the isomeric branched-chain hydrocarbons act as powerful knock preventers. The use of tetraethyl lead in gasoline has received widespread adoption as an anti-knock. Within the year, active work on the problem of rubber synthesis from petroleum derivatives has been vigorously prosecuted. Progress is reaching a stage where detailed statements shall be awaited with interest.

Buchler and Graves have isolated crystals from paraffin, petrolatum wax, etc., and have separated them into a series of pure fractions of paraffin hydrocarbons from $C_{15}H_{32}$ to $C_{43}H_{88}$. Similar crystals from paraffin wax have been studied by Rhodes, Mason and Sutton; both needles and plates are obtained, and the former are shown to be not true single crystals but concentric aggregates as shown by their optical properties.

Many of the problems on the American Petroleum Institute Fellowship grants, sponsored by John D. Rockefeller and the Universal Oil Products Co., are of direct interest to organic chemists, and these deal for the most part with petroleum or with aliphatic hydrocarbons. In a related field, Norris and Joubert have investigated the polymerization of the amylenes and Norris and Reuter the pyrolysis of

the amylenes. The subject of pyrolysis, or thermal decomposition, has received the attention also of Conant, Frey, Hurd, H. W. Walker, Cantelo and others.

Natural Products.—Advances have been made in the elucidation of the structure of rubber, particularly by Bruson, Sebrell and Calvert who used stannic chloride as a reagent, and by Fisher and McCollm who used organic sulfonic acids. Phillips has studied the lignin from corn cobs, and Shriner, Nabenhauer and Anderson have identified the solid matter separating when crude corn oil is chilled as a mixture of the myricyl ester of *n*-tetracosanic acid and the myricyl ester of an isobehenic acid. Taylor and Clarke have shown that the lower fatty acids from cocoanut oil are caproic 0.46%; caprylic 8.7%; capric 5.6; lauric 45.0; myristic 17.

Jacobs and Gustus have continued their studies on strophanthin. Stouder and Adams have studied rubiadin, one of the pigments of madder in which it occurs as a glucoside. Fieser has effected the synthesis of lapachol, a yellow coloring matter in the grain of a number of woods, and has shown it to be 2-(γ , γ -dimethylallyl)-3-hydroxy-1, 4-naphthoquinone. Both Williams and Osterberg have studied "Bios." Taurine has been synthesized from ethylene bromide by Marvel. Cinchona alkaloids have been demonstrated by Jackson and Wassell to be excellent clothes-moth repellants.

PHYSICAL METHODS OF ATTACK

Smyth has developed an interesting tool to confirm the idea that the structure of the benzene molecule is best represented by a regular hexagon with all the carbon and hydrogen atoms in the same plane; this is the electric moment of the molecule. Williams and Krehma have also studied electric moments of organic substances. Irreversible reduction of organic compounds has been treated by Conant and Lutz, and by Fieser and Ames. Conant has also studied the reduction potential of quinones. The deviations from Raoult's law for hydrocarbon mixtures have been determined by Calingaert and Hitch-

cock; the physical properties of a mixture of acetone and isopropyl alcohol by Parks and Chaffe; and the vapor pressure of methylene chloride has been measured by Perry. In a development of the chain-reaction theory of negative catalysis, Bäckström has investigated the rates of oxidation of benzaldehyde and enanthaldehyde. What promises to be a very important study in non-aqueous solutions is the work of Conant and Hall on super-acid solutions; glacial acetic acid is the solvent in this work, and the hydrogen-ion activities of several organic and inorganic substances have been determined and applied.

CATALYTIC PROCESSES

There seems to be a simple relationship between catalytic efficiency and acid and basic strength in the mutarotation of glucose according to the work of Brönsted and Guggenheim. Pearce and Ott have contributed by studying the catalytic decomposition of esters by nickel. Calculations by D. F. Smith show that it becomes increasingly easier to form the higher paraffins than the lower ones from water gas at all temperatures; the lower alcohols cannot be formed at atmospheric pressure and at 300° C. or higher, but the higher alcohols can be formed in considerable amounts from water gas under these conditions. Milas has studied the catalytic effect of vanadium pentoxide and of osmium tetroxide in inducing the oxidation of furfural with chlorates; the former gives fumaric acid and the latter mesotartaric acid. Peters and Stanger have developed a simple and efficient high-pressure autoclave for catalytic hydrogenations.

NITROGEN COMPOUNDS

Some of the important pieces of work in the field of nitrogen chemistry are the following: Strain's exposition of hydrobenzamide as an amono-aldehyde; Gilman and McCracken's interaction of nitrosobenzene with the Grignard reagent; Hellerman and Sanders' study of the oxidation of the primary amino group in benzohydrilamine; Porter and Wilbur's photochemical rearrangement of acetylchloro-aminobenzene

into p-chloroacetanilide, a rearrangement which they demonstrated to be also caused by heat alone at comparatively low temperatures; Hurd and Spence's elucidation of the structure of hydroxyureas and carbamides; Jones and Mason, and Scott and Mote, on hydroxamic acids. Since mucic acid is now inexpensive, Blicke and Powers advocate the preparation of pyrrole by heating ammonium mucate in glycerol; the yields are about 50%.

CARBOHYDRATES

Interpretation of the results of Gustus and Lewis on the oxidation of tetramethyl-glucose lead to far-reaching conclusions; instead of a selective addition and loss of water to explain the enolization of sugars, the mechanism is shown to be a simple keto-enol tautomerism. Glattfeld and co-workers have continued to lay the foundation for a thorough study of the C₄-saccharinic acids. One of Levene's many investigations dealt with the lactone formation of galactoarabonic acid and of melibiononic acid, and its bearing on the structures of lactose and melibiose. E. S. West has prepared an interesting reaction product of ethyl acetoacetate and glucose, namely, glucose cycloacetoacetic ester.

It has been known that the ethylene treatment of fruits and vegetables induces a higher sugar content than would otherwise form. In connection with this, Rea and Mullinix have demonstrated that starch emulsion, in the absence of enzymes, is catalytically converted into sugar by the action of ethylene.

ORGANIC COMPOUNDS OF METALS AND NON-METALS

Hodgson has described the mercuriation of o-nitrophenol, and Whitmore has continued his studies on mercuriation. Browne and Reid have described some useful reactions of tetraethyl lead; Reid has also prepared some azo dyes containing antimony. Kraus and Foster, and Orndorff, Tabern and Dennis have synthesized organic compounds of germanium; Bogert and Stull have prepared selenium derivatives; Bul-

lard and Robinson have made methyl-phenyl-stannanes. Gilman's work has not been limited to magnesium compounds, but has included organoberyllium halides. In the chemistry of organic-arsenic, Hamilton and Jelinek have prepared dicarboxy-phenyl arsonic acid; Palmer and Edee, aliphatic-aromatic arseno compounds; and Gottlieb-Billroth, di-benzo-arsenole.

ORGANIC MEDICINALS

Adams' work on chaulmoogric acid and related compounds has been one of the outstanding contributions of the year. Some of the new synthetic compounds show far greater bactericidal action towards *B. Leprae* than the sodium salts of chaulmoogric or hydrocarpic acids which are now used in the treatment of leprosy. In the case of cyclohexylethyl n-octyl acetic acid, for example, there is definite bactericidal action at dilutions of 1:320,000. Perkins and Cruz have also continued their investigations on this subject. Thayer and McElvain have developed anaesthetics in the piperidine series which seem promising; the duration of anaesthesia (1% solution) with 1-phenylethyl-3-carbethoxy-4-piperidyl-p-aminobenzoate on a rabbit's cornea is more than twice that of cocaine, whereas the toxicity is only $\frac{1}{2}$ that of cocaine. It has been found by Jones and Major that substituted o-alkyl hydroxylamines, related to the medicinally valuable amines: choline, procaine, veronal, phenylurea and thiosinamine, possess a similar pharmacological action to the amines to which they are related.

Although the clinical tests with hexyl resorcinol as an intestinal antiseptic have proved to be disappointing, many other compounds of a similar nature have been described; this is the work of Talbot and Adams, and of Bartlett and Garland.

ANALYTICAL METHODS

Shaw and Reid advocate the analysis of selenium in organic compounds by combustion with sodium peroxide in a Parr bomb. Kolthoff has pointed out that a number of triphenyl carbinol derivatives, containing 5 to 7

methoxy groups, make excellent indicators; they are unique in being colorless in alkaline solution, and colored in acid solution. Cone and Cady recommend diphenylamine as a qualitative reagent for zinc, and as an indicator in the titration of zinc; acetic acid and potassium ferricyanide must also be used. Lyons has shown that thioglycolic acid is useful to determine iron (in solution) colorimetrically at dilutions as great as 1 part in 10 million.

MISCELLANEOUS

The mechanism of the Wurtz-Fittig reaction has been expounded by Bachmann and Clarke. Bachmann has also assisted Gomberg in the development of Gomberg's reagent, which is probably magnesium subiodide. This has been found to reduce aromatic ketones to pinacols, and benzil to benzoin after hydrolysis with water. Marvel, Hager and Coffman have demonstrated that lithium n-butyl does not undergo simple metathesis in its reaction with organic halides; the products formed indicate that the first step is the formation of free radicals, which then undergo further reactions that vary widely with differing groups. An attempt to synthesize asymmetric allene bases has been described by Hurd and Webb. The subject of positive halogens attached to carbon in the benzene nucleus has received more attention by Nicolet and co-workers. Montanna has suggested the use of silicon tetrachloride as a reagent for the preparation of acid chlorides. α -Furfuryl iodides and α -furfuryl ethers have been prepared by Zanetti.

The electron-sharing ability of organic radicals is more and more attracting the attention of organic chemists; Hixon and Johns have presented an interesting article on this subject. Ramsperger has shown that the decomposition of azomethane is unimolecular. The availability of such chemicals as vinyl chloride and diethylene glycol has induced workers to a more accurate determination of some of their physical properties. o-Dichlorobenzene has also been found to be an excellent cleaner for metals.

SUMMARIES AND REVIEWS

In the *J. Chem. Education* 4, 1150, E. F. Smith has presented "A Glance at the Early Organic Chemistry of America." Cooley, in *Chem. Met. Eng.*, gives a survey of the preparation of anhydrous alcohol in America, particularly by the azeotropic method of continuous distillation. Cheap ethylene dichloride is discussed in *Ind. Eng. Chem.*, by Killeffer, as is also the preparation of butanol and acetone from corn. Woodruff has outlined the methods of utilization of the by-product gases from this industry (hydrogen and carbon dioxide), whereby synthetic methanol is produced. Brownlee discusses the preparation of furfural from oat hulls, and Trickey lists the solvent properties of furfural. In *Chemical Reviews*, the following summaries appear: Heidelberger, on immunologically spe-

cific polysaccharides; Gray and Staud, on recent advances in cellulose and starch chemistry; and Klarmann, on recent advances in the determination of the structure of proteins.

CHEMICAL MEETINGS

The year 1927 saw the second Organic Symposium of the American Chemical Society. It was held at Columbus, Ohio. Fifteen speakers of national fame presented papers of vital interest to organic chemists, and in addition Professor Paul Walden of the University of Rostock, visiting professor at Cornell University, discussed the Walden Inversion. The program also included five colloquia on topics of general interest. The second Institute of Chemistry, to be held at Northwestern University in the summer of 1928, bids fair to give organic chemistry a prominent part in the program.

AGRICULTURAL CHEMISTRY

By C. A. BROWNE

BUREAU OF CHEMISTRY, DEPARTMENT OF AGRICULTURE

GENERAL

Reorganization of Research.—In conformity with a general movement which has taken place in many Agricultural Experiment Stations, the United States Department of Agriculture, on July 1, 1927, made a separation of the research and regulatory agricultural chemical activities, which were formerly a double function of the Bureau of Chemistry. The agricultural chemical research work of the Bureau has been united with the chemical activities of the Bureau of Soils and of the Fixed Nitrogen Laboratory to constitute a new Bureau of Chemistry and Soils, while all chemical work of a law enforcement character, associated with the execution of the Federal Food and Drugs Act, the Insecticides Act, the Naval Stores Act, the Tea Inspection Act, and the Caustic Poison Act, has been assigned to the purely regulatory office of the Food, Drugs and Insecticide Administration.

SOIL CHEMISTRY

First International Congress of Soil Science.—The most important event in 1927 was the meeting of the First International Congress of Soil Science in Washington, June 13 to 22. Delegates were present from over twenty foreign countries. Of the one hundred and fifty papers dealing with the chemistry, biochemistry and fertility of soils, seventy-five were contributed by American scientists. These contributions exemplified most completely the chemical research which is being conducted at the present time in the laboratories of the Department of Agriculture and of the various State Agricultural Experiment Stations. Among the topics of chief chemical interest which were discussed may be mentioned soil acidity, basic exchange, soil colloids, leaching, the soil solution, lysimeter studies, humus, absorption, fixation of nitrogen by bacteria, ammonification, nitrification, oxidation of sulfur

by bacteria, soil respiration, influence of fertilizers on biochemical processes, green manures, influence of various fertilizers on the growth of special crops (such as cotton, potatoes, alfalfa, etc.), significance of small amounts of inorganic constituents, chemical studies upon peat and other soil types, and analytical and cultural methods of research.

The proceedings of the congress will be published in several volumes with a total of about 3,000 printed pages. After the meetings of the congress in Washington, the delegates from the different countries took part in a one month's excursion, during which they visited all the important soil areas of the United States. The beneficial effects of the congress in promoting the publication of valuable scientific papers and in stimulating research have been of inestimable value.

PLANT CHEMISTRY

Stimulation of Plant Activities by Chemicals.—In a recent paper presented before the United States National Academy of Sciences (*Proceedings*, vol. 13), Denny of the Boyce Thomson Institute for Plant Research discusses the stimulating effect of various chemicals on the vital processes of plants. The yellowing of mature lemons and oranges of green color can be greatly accelerated by exposing the fruit to one part or less of ethylene gas in 10,000 parts of air. This process, first developed by Denny in 1922 at the Fruit and Vegetable Laboratory of the United States Bureau of Chemistry in Los Angeles, is now being applied commercially in improving the color of mature citrus fruits that have an objectionable green appearance. The chemical mechanism of the ethylene treatment is not understood, although it seems to be connected with a marked increase in the respiration of the fruit, the yield of carbon dioxide being doubled or trebled in 48 hours. Denny now reports that various chemicals, such as ethylene chlorhydrine, ethylene chloride and thiocyanate solutions, exert another physiological effect in curtailing the dormant period of potatoes and other

agricultural plants. This curtailment promises to have considerable practical value in the production of vegetables and fruits for the early market.

SPONTANEOUS COMBUSTION

Losses By Fire.—It has been estimated that the agricultural losses of the United States, as a result of farm fires, exceed \$150,000,000 annually. A very important cause of such fires is the spontaneous ignition of horse manure, hay, and other agricultural produce. The chemistry of the spontaneous combustion of hay has been studied most intensively in Switzerland, where the phenomenon is of frequent occurrence, by Burri, Vordi, Lauffer, Schenk, Troxler, Tschirch and other chemists.

Combustion Process.—The first phase of the process is the biological stage in which the moist material, through the activity of yeasts, molds, and thermophilic bacteria, undergoes a fermentation with elevation of the temperature to 70° or 80° C. at which point all microorganic life is killed. With the access of air to the interior of the heated mass there follows the second or chemical phase in which spontaneous oxidation rapidly raises the temperature to the point of ignition. Easily oxidizable unsaturated fermentation no doubt enter into the reaction. The formation of pyrophoric iron and of other catalytic agents is also supposed to play a part. Spontaneous combustion and other causes of farm fires are now being investigated by the scientists of the Department of Agriculture under a recent Congressional appropriation.

TOXIC PLANT CONSTITUENTS

Gossypol.—Reports of the death of farm animals as a result of eating products which were contaminated with toxic plant substances have been of common occurrence. Hogs and cattle have died from eating cottonseed products that contained excessive amounts of the yellow crystalline substance gossypol, which was first designated as the toxic ingredient of cottonseed by Withers and Carruth of the North Carolina Agricultural Experiment Station in 1915. Clark of

the Bureau of Chemistry and Soils has recently made an exhaustive chemical study of gossypol and has determined its formula to be $C_{30}H_{30}O_8$. Investigations are now being conducted upon practical methods for detoxifying cottonseed meal by solvent extraction of the gossypol. The results have an important bearing upon the problem of utilizing cottonseed meal as a human food.

Richweed.—Couch of the Bureau of Animal Industry has recently investigated the toxic constituent of richweed (*Eupatorium urticaefolium*), a pasture plant which produces a disease of cattle known as "trembles." It causes also a malady known as "milk sickness" among human beings and animals who have drunk the milk of cows affected with "trembles." Couch isolated from richweed a viscous oily substance of pleasant aromatic odor which he called tremetol. It has a composition corresponding to the formula $C_{16}H_{32}O_8$, and produced, when fed, the characteristic symptoms of "trembles," both in sheep and suckling lambs.

EXPERIMENTAL IMPROVEMENTS

Increasing the Protein Content of Wheat.—The Crop Chemistry Laboratory of the Bureau of Chemistry and Soils has demonstrated that when nitrates or ammonium salts are applied to wheat at the time of heading, the protein content of the grain is increased by one-third or more of the original amount. The premium paid for high protein wheat in 1927 has been as high as 15 cents per bushel for every per cent of protein above 12. The nutritive value of the flour from high protein wheat is not only greater, but the texture and color of the bread made from such flour are also superior.

Removal of Objectionable Odors and Flavors from Milk.—The Tennessee Agricultural Experiment Station has developed a successful method for removing objectional onion or garlic odors and flavors from milk. The process, which is easily adapted to home or farm use, consists simply in shaking the milk with about one-tenth its volume of

purified mineral oil which is then removed by filtration through several thicknesses of cotton cloth. With milk which is heavily impregnated with odorous constituents the process is repeated once or twice. The composition of the milk is not changed except for a slight reduction in the fat content.

The Soft Pork Problem.—Certain feeds such as soy beans, peanuts and rice polish, when fed to hogs, have the objectionable property of imparting an excessive softness to the fatty tissues which impairs the market value of the resultant pork. The soft pork problem, which is one of great importance to American agriculture, has been investigated by a large number of agricultural experiment stations in cooperation with the Department of Agriculture. The experiments prove conclusively that soft pork is simply the result of the deposition in the animal tissues of unsaturated fats of softer consistency closely resembling those contained in the feed. The consequences can be avoided by incorporating with the softening feed a sufficient amount of tankage, brewers rice, or other supplements which tend to produce a hard fat.

Sunlight in Animal Feeding.—Largely as a result of the investigations of Hess at University and Bellevue Hospital in New York, and of Steenbock at the Wisconsin Agricultural Experiment Station, an increasing amount of attention is being given in the United States to the importance of sunlight and ultra-violet light in animal and human nutrition. The Cornell Experiment Station found that pigs fed in the dark upon corn, wheat middlings, and linseed meal developed a stiffness that was rare in pigs exposed to sunlight, the latter having a markedly higher ash content of bone. Similar results were reported at other experiment stations. The Wisconsin Station found that chickens fed on corn and skim milk in the absence of sunlight failed to reach maturity. The Ohio Station determined that ultra-violet light increased the egg production of fowls and the number of hatched chickens.

ELECTROCHEMISTRY

BY COLIN G. FINK

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PROGRESS IN THE INDUSTRY

Electrolytic Zinc.—The year 1927 has witnessed a number of important achievements in the American electrochemical industry. Of particular note is the rapid growth of the American electrolytic zinc industry, foremost of its kind in the world. Electrolytic zinc was primarily a "war baby" and many at the close of the War prophesied an "early death." Contrary to all predictions the industry has grown in leaps and bounds so that in the northwestern states alone the production has increased from a little over a hundred tons per day to almost 1000 tons per day. The nearest competing process for zinc, the old standard retort process, has keenly felt the effects of the newer process and during a greater part of the year there were but 60% of the retorts in operation. Electrolytic zinc has persisted and grown in spite of the higher production costs.

Electric Furnaces.—The Lector-melt arc furnace of Pittsburgh has found wide application in the steel and ferro-alloy industries. The United States continues to lead the world in the application and total installations of electric furnaces. There are almost 600 electric steel furnaces in operation making a large diversity of iron and steel products. The Ajax Electrothermic Corporation has been very active in furthering the introduction and application of the electric induction furnace. Dr. E. F. Northrup, Vice-President of the corporation, described his new high speed-high frequency induction furnace at the 1927 spring meeting of the American Electrochemical Society: The new 300 lb. commercial alloy melting furnace is especially designed for melting ferrous alloys. Power is supplied to the furnace at 1,920 cycles and 900 volts. The resistor alloy "nichrome" required 462 kilowatt hours per metric ton.

Another interesting development in

the electric furnace industry is the new process for electrosmelting zinc. No details have as yet been published.

FUSED ELECTROLYTES

The fused electrolyte industry today produces aluminum, magnesium, calcium, cerium, barium, sodium, potassium and beryllium. A newcomer in the field is zirconium but as yet the production is comparatively small. The most notable event from an economic point of view was the starting of the operation of the first units of the new monster plant of the Aluminum Company of America at Arvida. (R. S. McBride, *Chem. Met. Eng.* 34, 76-83, 1927.) The Hall cell is used involving many improvements in design. The total capacity of the Arvida plant is equal to the present day total world's production of aluminum. N. V. Hybinette of Wilmington has perfected a new corrosion resistant aluminum alloy "Hyblum." It has a bright mirror surface, is readily machined and wrought, and of low specific gravity.

The Government has continued its investigation of beryllium and its alloys. The metal is being produced at the Kemmet laboratories, Cleveland. The addition of 2 to 3 per cent of beryllium to iron renders it as tough as steel. Similarly, 3 per cent added to copper produces an alloy like bronze.

A method has been perfected by Harold K. Work at the Mellon Institute, Pittsburgh, for electro-depositing nickel, cobalt and other metals on aluminum.

AQUEOUS ELECTROLYTES

New Plants.—The growth of the electrolytic zinc industry has been referred to above. The Anaconda Copper Company now has two electrolytic zinc plants, one at Great Falls, Mont., and the other at Anaconda. The Bunker Hill and Sullivan Co. has completed the first 50 ton unit of its electrolytic zinc plant at Kellogg,

Idaho. In this plant the Tainton process is used. Cadmium, likewise electrolytically precipitated, is a by-product of the electrolytic zinc industry and is finding wide application as a surface plating for iron and steel. Cadmium is very resistant to atmospheric corrosion. (Humphries, *The Iron Age*, Aug. 18, 1927.)

Chromium Plating.—The past year has seen the universal application of chromium plating on articles of iron, steel, brass, copper, nickel and other metals. In our country alone there are now over sixty chromium plating plants in operation whereas a few years ago the industry was non-existent. The applications are most diversified. Of particular interest are the marine fittings, plumbing fixtures, high temperature apparatus, etc. (Fink, *Brass World*, May, 1927). Chromium mirrors have been found to be more satisfactory than the old standard silver mirrors. Chromium does not tarnish nor corrode and is very much harder than silver.

Malleable Nickel Deposit.—Patents were issued to N. V. Hybinette of Wilmington (U. S. #1,628,149, May 10th, 1927) for an improved malleable nickel deposit. The electrolyte is maintained in condition by withdrawing it from the electrolytic tank, subjecting it to a boiling operation and returning it for further use.

Concentrated Solutions.—The electrochemistry of concentrated aqueous solutions was discussed at length at the spring, 1927, meeting of the American Electrochemical Society. Whereas our knowledge of dilute solutions is very exact, that of concentrated solutions, such as are used in many of our industrial processes, is comparatively meager.

ELECTROLYTIC CELLS

Research.—Noteworthy researches have been carried out on the Leclanché cell (dry battery) by the Chas. F. Burgess Laboratories. Graphitic oxide, it was found, could be used as a very effective depolarizer in place of, or in conjunction with, manganese dioxide (Trans. Am. Electrochem. Soc. 53, 101). The electrode equilibrium in the Weston Standard cell was investigated by W.

C. Vosburgh of the Eppley Laboratory (J. Am. Chem. Soc., Jan. and Sept., 1927). He found that an excess of mercuric ions causes the abnormally high electromotive force often noticed in the Weston cell. In place of the neutral sulfate solution Vosburgh recommends the use of a weak sulfuric acid solution (0.01 mol per litre) and thereby eliminate the indefinite decrease in the electromotive force which usually occurs when the solution is neutral. R. T. Dufford, Dorothy Nightingale and L. W. Gaddum of the University of Missouri (J. Am. Chem. Soc. 49, 1858, 1927) found that the electrode potential of cells containing ether solutions of Grignard compounds, is very sensitive to light and that following a change in illumination, the voltage may be a periodic function of time.

ELECTROLYTIC HYDROGEN

A Reducing Agent.—At the spring, 1927, meeting of the American Electrochemical Society the session which attracted worldwide attention was on the "gaseous reduction of ores and other metal compounds." Electrolytic hydrogen serves as a very valuable reducing agent when metals of high purity are desired. In other cases, carbon monoxide or mixtures of this gas and hydrogen are used. Fink and Mantell showed that these gases will easily reduce tin ore at 700° to 800° centigrade as compared with 1,400° C. for solid carbonaceous fuel. Frank Hodson of Philadelphia and others reported upon the advantages of gaseous reduction in the case of iron ore. "Reduced metallic iron, that in the process of reduction has not been subject to extreme high temperatures, to contact with fluxes and refractories at high temperatures, to coke, and, above all, to enormous volumes of nitrogen from the air blast, is a totally different product from pig iron. The old blast furnace is fundamentally wrong" (*The Iron Age*, Nov. 17, 1927).

ELECTROCHEMISTRY OF GASES

Tube Lighting.—The widespread use of neon and neon-mercury tube lighting, in particular for signalling and advertising purposes, is one of

the outstanding events of the year. More than a quarter of a century ago D. McFarlan Moore, one of the Edison pioneers, had introduced tube lighting in New York and other towns using carbon dioxide and nitrogen as gaseous conductors. The recent revival of the tube lighting industry is largely due to the penetrating red rays of neon (one of the rare gases of the atmosphere). Small neon lamps are used for signal purposes (L. C. Porter and G. F. Prideaux, *Gen. Elec. Rev.*, March, 1927).

How the 3-electrode vacuum tube may be applied as chemical engineering equipment is recorded by Harold C. Weber (*Chem. Met. Eng.*, July, 1927). It is being used for the analysis of gases; for the measurement of gas velocities and gas pressures, etc. The arc and spark spectra of zirconium and scandium were investigated

and reported upon by the Bureau of Standards.

Researches.—A detailed research on the thermal decomposition of ozone was carried out by Oliver R. Wulf and Richard C. Tolman of the California Institute of Technology. They found that the decrease in the specific decomposition rate which accompanies increase in the total pressure of oxygen-ozone mixtures is due to the inhibiting effect of oxygen on the decomposition (see also Saunders and Silverman, *Ind. Eng. Chem.*, Dec., 1927). L. O. Grondahl and P. H. Geiger of the Westinghouse Company described the new oxide electronic rectifier (*J. Am. Inst. Elec. Eng.* 46, 215, 1927). A partially oxidized disc of copper is the rectifier unit. Rectification apparently takes place at the junction between the copper and the oxide without visible physical or chemical change.

INDUSTRIAL CHEMISTRY AND CHEMICAL ENGINEERING

BY H. C. PARMELEE

EDITOR, *Chemical and Metallurgical Engineering*

ECONOMIC SURVEYS

An outstanding activity in the field of chemical engineering in 1927 was the widespread attention given to the economic factors affecting the location and expansion of industry. Without minimizing the importance and necessity of research and development along sound technological lines, leaders of industrial thought perceived the necessity for careful investigation of plant location with reference to labor, raw materials, markets, distribution, etc. Cities, States and regions undertook economic surveys under scientific and engineering direction to determine logical lines of growth and expansion. Cincinnati, Baltimore, Atlanta and St. Louis were conspicuous examples among cities, and New England made a thorough regional survey.

A broader undertaking with particular reference to chemical and chemical engineering industries was that of *Chemical & Metallurgical Engineering* which published during the

year 27 articles covering the United States, in which the present status and opportunities for future growth were portrayed. Material aid in maintaining and developing foreign markets was rendered by the Federal Department of Commerce.

PROGRESS IN TECHNOLOGY

Research.—This economic effort in no way diminished the attention to scientific and industrial research and development. This is set forth in the second annual Survey of American Chemistry issued under the auspices of the Division of Chemistry and Chemical Technology of the National Research Council. More money was expended on research than in any previous year, and important contributions to industrial progress were made from the laboratories of universities, manufacturers and research institutions.

Organic Solvents.—In no branch of chemical technology was progress more notable than in production of

organic solvents. Ethylene derivatives from natural gas found extensive use in the manufacture of lacquers and explosives. Ethylene glycol was used as an anti-freeze compound for automobile radiators. Ethylene glycol dinitrate replaced part of the nitroglycerine in the manufacture of dynamite, with consequent advantages in lowering the freezing point of the explosive and reducing its sensitivity to impact. Other derivatives were used as solvents for nitrocellulose, gums and resins entering into modern lacquers. The dichloride found use as a non-flammable solvent replacing gasoline in the extraction of oils from seeds.

New alcohols appeared on the market, some derived from fractions of natural gasoline and others as by-products from the cracking of petroleum distillates. Pure amyl alcohol and amyl acetate were produced from pentane fractionated from natural gasoline, and isopropyl and secondary butyl alcohols from the gases resulting from the cracking of petroleum. Butanol was produced on an increasingly large scale from the fermentation of cornstarch. Amyl, butyl and ethyl acetates continued to play important rôles as commercial solvents. Synthetic methanol, first produced on a commercial scale in Germany and largely imported into this country, was produced by domestic plants in 1927. In one case the product was synthesized from water gas, and in the other it was produced as a by-product from butanolacetone fermentation.

DYES

The annual dye census for 1926 published in 1927 showed that domestic production of coal-tar dyes continued on an expanding scale. Total production was 87,978,624 lbs. as compared with 86,345,438 for 1925. Sales for 1926 amounted to \$36,312,648 as compared with \$34,468,332 in 1925. There has been a steady decline in the average sales price per pound from \$1.26 in 1917 to 42¢ in 1926. The domestic industry supplied about 93 per cent of domestic consumption. The number of producers has declined from 69 in 1925 to 53

in 1926. Exports in 1926 increased only slightly over 1925, but imports fell off over half a million pounds. About two million dollars was spent for dye research in 1926, being about half a million less than in 1925.

PETROLEUM REFINING

Cracking.—Chemical engineering developments in this field begin to show a trend away from cracking in the liquid phase at high temperature and pressure, toward vapor-phase cracking at lower pressures and temperatures. The causes are economic as well as technologic. High-pressure liquid-phase cracking equipment is expensive and under some market conditions will not make an adequate return on the investment. Vapor-phase cracking, on the other hand, calls for a smaller investment and yields a large proportion of unsaturated hydrocarbons notable for their "anti-knock" properties. They are used largely in blended motor fuels commanding a premium for their better performance in internal combustion engines. Natural or casing-head gasoline, because of its greater volatility possesses some anti-knock properties and is similarly used.

Motor Fuels.—The petroleum refining industry as a whole is giving more attention to the utilization of its motor fuels; and with a parallel advance in the design and construction of high-compression motors, the ultimate consumer is getting more miles per gallon out of his motor fuel. The recovery of organic solvents from petroleum, previously mentioned, is an example of an important trend toward the use of petroleum as a chemical raw material. As such it is a constructive phase of efforts that are being made by the chemical engineer toward conservation of petroleum resources.

PULP AND PAPER

Newsprint Influence.—Technology applied to pulp and paper manufacture received a continuing impetus in 1927 due to (1) the enormous demand for newsprint and (2) a new appreciation by the industry of the value of applied science. Demand for newsprint forced the development of

machines up to 20 ft. in width and operating at speeds up to 150 ft. per minute. To supply pulp for such large machines would require a beater room of tremendous capacity were it not for the discovery that the pulp from the grinders and digesters is virtually ready for the final paper-making operation. Many mills now have systems for mixing these pulps in the desired proportions and supply these mixtures directly to the paper machines.

Hard Woods.—Considerable study has been given to the pulping of hard woods such as maple, birch, etc., and the sulphite process has been successfully modified to this end. The modification consists largely of adding sodium salt solutions to the calcium bisulphite cooking liquor. The rayon industry continues to make heavy demands on some sulphite mills for extraordinarily pure cellulose.

Paper Board.—The manufacture of paper board has expanded rapidly, and the consumption of this material in shipping containers, etc., now equals in volume the consumption of newsprint, each representing one-third of the total paper consumption. A new "synthetic" building material was placed on the market in 1927, in the form of molded lumber made from wood waste and sawdust. The material is treated with superheated steam and "exploded" into a pulp which is subsequently compressed.

Paper Dryer.—Detailed studies of paper-dryer operations has led to more efficient and economical use of heat. Radical changes in dryer design have resulted in the invention of the vacuum dryer and the electric dryer now in use in some paper mills.

RUBBER

The principal technologic advances made in this field in 1927 were the use of anti-oxidants in molded rubber goods, the electrodeposition of rubber from latex, and the development of a method for attaching rubber to metals, wood, and other materials of construction. The use of anti-oxidants in compounding rubber goods, principally tires, has greatly retarded the deteriorating effects of air and sunlight, and has proportion-

ately increased the life of rubber commodities. Electrodeposition from latex has been developed to a point where intricate forms can be rubber-coated and used for a variety of industrial purposes. Inner tubes also have been produced experimentally by this process which holds great promise of important industrial development. Not the least of technical achievements was the development of a new method for firmly attaching rubber to metal, making possible the industrial use of rubber-lined tank cars and vessels in a considerable variety of forms.

Great Britain controls the major part of the world's rubber plantations, and through the Stevenson Act has restricted production and fixed prices. During the past year, however, the proportion of rubber production under British control has decreased from 67 to 59 per cent. American tire and automobile manufacturers have established plantations in Liberia and Brazil, and while some years must elapse before their influence on production can be felt, they will nevertheless modify the existing control still further.

NITROGEN FIXATION

Six efficiently operated nitrogen fixation plants in the United States now have a capacity of 35,000 tons of nitrogen per annum, and this capacity is expected to rise to 40,000 tons early in 1928. The ammonia thus produced has not yet found its way into agricultural fertilizers, but the announcement in 1927 of a large nitrogen-fixation plant by one of the largest chemical companies is an indication of the early entry of synthetic ammonia into the fertilizer industry. This plant, to be located at Hopewell, Va., was under construction late in 1927 and is expected to be completed in 1929. When it comes into full production in 1930 it is expected that the output of fixed nitrogen in the United States will be at least 130,000 tons per annum.

Ammonia Oxidation.—Closely related to the production of synthetic ammonia is the use of that material in the manufacture of nitric and sulphuric acids, two great basic indus-

trial chemicals. The low cost of synthetic ammonia has led to the introduction of oxidation processes for the direct manufacture of nitric acid, and for the production of nitrogen oxides in the manufacture of sulphuric acid. In the latter process the oxidized ammonia replaces the nitrogen oxides obtained from Chilean nitrate.

CELLULOSE PRODUCTS

Synthetic Fibres.—Industries based on the use of cellulose (cotton, wood pulp) as a raw material for chemical manufacture continue to grow in size and importance. For example, rayon, celanese and other synthetic fibres, increased in production from 62,575,000 lbs. in 1926 to 74,320,000 lbs. in 1927. Two new producers in the domestic field in 1927 represented American branches of German corporations: one using the cuprammonium process, and the other using the viscose process. There has been a distinct growth in production by the cellulose acetate process both in Europe and the United States.

Textiles.—The increased use of cellulose acetate in the textile industry promises to expand into the field of plastics. There has been an alignment of business interest between one of the acetate rayon manufacturers and one of the oldest makers of celluloid which is expected to result in the production of so-called safety or non-flammable plastics.

Glass.—Another industrial field recently invaded by plastics is the manufacture of so-called non-shatterable glass, which is a "sandwich" of two pieces of glass between which is cemented a sheet of celluloid. An objection to the product arises from the fact that nitrocellulose decomposes on long exposure to light, resulting in discoloration and even rupture of the "sandwich." This objection, however, promises to be overcome by the use of cellulose acetate for the intermediate layer. So-called synthetic glass made from urea and formaldehyde has recently attracted attention as a transparent material free from the undesirable property of discoloration under the action of light.

Nitrocellulose lacquers continue to show large increases in production. The output for 1925 was more than 3 times that of 1924, and that for 1926 was twice as large as for 1925. The figures for 1926, the latest available, show a production of 23,980,400 gals., made in 138 establishments.

COAL CARBONIZATION

The principal developments of the year was the operation at Urbana, Ill., of the process of S. W. Parr for the treatment of high-oxygen Illinois coals. The process is carried out in two steps, in the first of which the coal is preheated to a temperature of 300 deg. C. This step accomplishes three purposes: Removal of moisture, removal of oxygen as carbon dioxide and preheating the final oven charge. The ultimate effect is greatly to increase the throughput of the oven and the ability to coke coal that cannot be coked by other processes. The by-products are about 20 gals. of low-temperature tar and 9000 cu. ft. of 700-B.t.u. gas per ton of coal treated. The coke is 65 to 70 per cent by weight of the original coal charged.

METALS AND ALLOYS

During 1927 there was marked interest in certain metals and alloys possessing properties of special interest in chemical engineering production. Chief among these was chromium used in so-called rustless iron and stainless steel, also as a plated coating on hardware, fixtures and various forms of industrial equipment. Chromium steels found extended use in equipment to withstand chemical operations at high pressures and temperatures, and in processes where resistance to corrosion was demanded.

PRICES, IMPORTS, EXPORTS

Prices for chemicals showed slightly downward trend according to the weighted index of *Chemical & Metallurgical Engineering*, ranging monthly from 112 to 113, 1913-14 basis equals 100. This compares with a range of 112 to 116 in 1925 and 111 to 114 in 1926. Imports of chemicals and related products for 10

PHYSICS AND THE ATOMIC THEORY

months of 1927 were valued at \$109,904,021, being less than for the same period of 1926 when the value was \$114,480,763. Exports of the same

group of commodities for the same period were \$109,567,536 in 1927 as compared with \$102,290,085 in 1926, thus showing an increase.

PHYSICS AND THE ATOMIC THEORY

BY KARL K. DARROW

TECHNICAL STAFF, BELL TELEPHONE LABORATORIES

In physics, 1927 has been a period of bewildering fluctuations in theoretical views, and of steady and rapid gathering of significant experimental data. Owing to the multitude of these and the difficulty of judging them so early, it is well not to attempt to list them individually, but to sketch the present condition of some of the fields of research where activity is greatest and progress most extensive.

THE ATOM

Structure.—In the account of Atomic Theory which appeared in the preceding issue of the AMERICAN YEAR BOOK, mention was made of two just-previously-invented systems of fundamental laws and principles, proposed to serve as bases for complete theories of the structure of the atom, and indeed for interpreting all the phenomena of Nature. These were the "matrix mechanics" founded by Heisenberg, and the "wave mechanics" conceived by Louis de Broglie and developed by Schroedinger. Throughout 1927 these have continued to monopolize the attention of almost all students of mathematical physics, who have tested them by applying them to all the phenomena to which the theory of Bohr and Sommerfeld, already dignified by the title of "classical quantum theory," was in its turn applied during the previous fifteen years.

Atom-Model for Hydrogen.—To illustrate this stage of the evolution of theoretical physics, and incidentally the rôle of the "spinning electron" which in the course of the last couple of years has firmly established itself in our science, it is desirable to expound the history of the atom-model for hydrogen. Bohr's immensely

fruitful contribution to this story may be divided into two parts. First we should put his conception of "stationary states"; for each kind of atom there is a certain set of energy-values, the only ones which it may assume; radiation is emitted or absorbed when the atom passes from one of these states to another, forming a certain line of its spectrum; the frequency of this line is equal to the energy-difference between these states, divided by Planck's constant h . This conception was soon promoted into a fact of experience, one of the best-established facts which we know. Second: Bohr supposed that the hydrogen atom consists of an electron and a nucleus; that the electron revolves in orbits like those of the planets, yet cannot revolve in every mechanically-possible orbit, but is constrained to accept one or another of certain particular ellipses determined by certain particular conditions. These are the so-called "quantum conditions"; and the procedure of mathematical physicists, in the days when the Bohr-Sommerfeld theory (so known because Sommerfeld extended it) was being tested, consisted in applying these conditions to determine the orbits of electrons in this and other atom-models, and in ascertaining whether the energy-values deduced for these "permitted" orbits agree with the observed energy-values of the stationary states of the atoms for which the models were designed.

In the case of hydrogen, there are three sets of data upon which to test this theory: the values of the stationary states when the atoms are exposed (a) to no external field at all, (b) to an electric field, (c) to a magnetic field. The original theory

was admirably successful in treating the data of classes (a) and (b), but only partially so in dealing with those of class (c); it failed when the applied magnetic field was strong.

"Spinning Electron."—The introduction of the "spinning electron" resolved these and certain other difficulties, later to be mentioned, in a most gratifying fashion. If the electron is supposed to be a ball of negative electricity rotating around an axis through its center with a certain angular momentum (determined by the quantum-condition of Bohr and Sommerfeld, or one resembling it) it is in effect supposed to possess not only the properties of a point-charge, but also those of a tiny magnet with a certain magnetic moment. If such an electron is revolving in one of the "permitted" ellipses, the energy-value of the system is not the same as it would be if the electron were not a magnet; it will depend upon the orientation of the axis of spin of the electron. Suppose, for instance, we assume that the axis of spin must be perpendicular to the plane of the elliptical orbit, but may point in either of the two senses of this perpendicular direction—parallel or anti-parallel to the vector representing the angular momentum of the orbital motion of the electron; then in effect we are "permitting" a pair of energy-values for each elliptical orbit, where but for this magnetic moment we should have only one.

Application.—On applying this new assumption to the hydrogen atom-model, it is found that (through an almost miraculous balancing-out of opposing changes) the agreement of the new theory with the data under (a) and (c) is as good as with the old one, while that under (b) is now much bettered. Furthermore, it becomes possible to establish a close and long-desired analogy between the spectrum of hydrogen, the spectra of the alkali metals, and the X-ray spectra of the more massive atoms; and the long-lasting obscurities of "relativity doublets" and "screening doublets" in the last-named spectra are almost, if not entirely, dissipated.

Now let us consider how de Broglie and Schroedinger attack this problem. First, it must be realized that their theory, and the matrix-mechanics likewise, involve the same atom-model as that of Bohr; for Bohr's model may be characterized as a system, having for its potential energy the function $V = -e^2/r$ (here r stands for the distance from nucleus to electron); and we shall find this very function reappearing when the problem is studied by either of the new systems of mechanics. It cannot be said, therefore, that atom-models have been discarded. In wave-mechanics, indeed, we have what may be styled an *acoustic atom-model*—an imaginary fluid dispersed throughout space, the resonances of which correspond to the several stationary states of the atom which it is designed to represent. The fluid is supposed to be the carrier of waves, as was the aether of two generations ago. When the energy of the atom is denoted by E , the frequency n of the waves is given by the equation:

$$hn = E \quad (1)$$

The speed of the waves depends upon their frequency, and also varies from point to point in the fluid. It is the latter law of variation which is prescribed by the designer of the atom-model. Thus for hydrogen, we are asked to imagine a fluid in which, at any point distant by r from its center the speed u of waves of frequency n is given by the equation:

$$u^2 = E^2/2m(E + e^2/r) \quad (2)$$

in which E is related to n by equation (1). Let us pause to note that at some points u is imaginary, a circumstance which is somewhat disconcerting but does not affect the analogy about to be stated.

It is the hypothesis of de Broglie and Schroedinger, that whenever the atom is in one of its stationary states, the corresponding fluid is in resonance. But this cannot happen for every frequency, nor consequently for any and every energy-value E ; just as a drumhead with definite density, elasticity, and fixed boun-

dary cannot resonate with any and every frequency. Just as the drum-head has certain "natural frequencies" or resonance-frequencies determined by its elasticity, density and diameter, so that imaginary fluid has certain resonance-frequencies determined by the law of variation of wave-speed postulated by its inventor. On computing these resonance-frequencies, and multiplying each by h to obtain the corresponding energy-values, the same values are found as came out of the application of the quantum-conditions of Bohr and Sommerfeld to the orbits of the electron which they assumed to be circulating around the nucleus. The imaginary fluid defined by (2) is therefore as competent a model for the hydrogen atom, as the model with the nucleus and the revolving electron. That former model was defective in certain respects, in which it was improved by assigning a magnetic moment to the electron; the new one is imperfect in the same regard, but if we add to the expression $-e^2/r$ for the potential energy in equation (2) the appropriate term to take account of the magnetism of the electron, we find—according to Richter—that the disagreements vanish in precisely the same way.

Radiation and Spectrum Lines.—Successful as the theory of Bohr and Sommerfeld was in predicting the numerical values of the stationary states, it comprised no picture of the way in which radiation is actually emitted or absorbed when the atom passes from one state to another, and it offered no means of computing the relative intensities of various spectrum lines. The so-called "Principle of Correspondence" was developed to deal with the latter problem, but it was never perfected, and shed no light upon the former. The model of the imaginary fluid is here of some assistance. Each stationary state is visualized as a pattern of stationary waves in the fluid, and when two states coexist their patterns interfere to form a system of what, in acoustics, would be termed beats; these, in certain cases, surge to and fro in the fluid with a frequency equal to the difference be-

tween the frequencies of the two co-existing states,—equal, therefore, to the frequency of the emitted light. From the intensity and the direction of this surging motion, one may infer the intensity and the polarization of the resulting light. There are other factors not determined by any part of the theory which has been mentioned, and which may be expected to influence the relative brightness of spectrum lines radiated by a gas, but for groups of lines lying close together, such as those which replace a single line when an electric field is applied, it may reasonably be supposed that these factors are the same for each line of the group; and then the theory may be tested by observing the relative intensities and polarizations of the lines. Many such observations are now being made, and it appears that as a rule they sustain the theory.

Discussion of Theory.—It must be admitted that many theorists, notably among those who are expert in the methods of matrix mechanics, would not attach any great importance to the analogy with elastic fluids and acoustic resonances; they regard it as a convenient but accidental coincidence, and consider the methods of wave-mechanics merely as alternative and not always applicable ways to obtain numerical results which can be computed more systematically, if not so easily, by their own methods. In their favor it must be conceded that for some problems of atomic theory the imaginary fluid is two-dimensional or one-dimensional, for some it must have more than three dimensions, and for some we must actually introduce non-Euclidean space. However, the methods of matrix mechanics are difficult and strange, and some of the speculations of the Goettingen school of theorists lead remarkably far away from all customary modes of thought; and while in the course of time they may become so familiar that they will cease to seem odd (we are constantly being admonished that such was the history of Maxwell's electromagnetic equations!) it seems more probable that most physicists will continue to visualize either atom-models consist-

ing of nuclei surrounded by families of electrons, or fluids vibrating in complicated patterns of stationary waves. Evidence for the "reality" of these waves of de Broglie has in fact just been discovered, of so striking a character that the waves cannot any longer be regarded as mere mathematical fictions.

DAVISSON-GERMER EXPERIMENT

Hazardous as it usually is to try to forestall the judgments of the future, it seems safe to predict that the already famous experiment of Davisson and Germer will henceforth be regarded as the most important of 1927. This experiment was performed by directing streams of electrons, moving with uniform speeds along parallel lines, against the surface of a crystal of nickel thoroughly freed of gas and maintained in the highest possible vacuum. A collector was moved all about the region above the metal surface, so as to catch in succession all the streams of electrons reflected from the crystal in all directions. It was then discovered that *the electrons undergo not a reflection but a diffraction*. The files of atoms, lying in regular array in the outermost layer of the crystal, catch the electron-stream in some mysterious fashion and divert a part of it as the lines of a diffraction-grating divert a part of the incident light. For certain values of electron-speed, an actual sharp diffraction-maximum may be formed in a direction nearly tangential to the metal surface by the succession of parallel rows of atoms in the surface-layer. From the angle θ between this maximum and the normal, and from the distance d between the consecutive rows of atoms, the "wavelength" of the incident electron-stream can be computed by the well-known formula of the plane diffraction-grating:

$$\lambda = d \sin \theta \quad (3)$$

At other values of electron-speed, strong sharp diffraction-maxima appear in other directions inclined at greater angles to the metal surface; these likewise conform to equation (3), though they result from diffraction

not by the outermost atom-layer alone, but by several layers reinforcing one another. Certain features of this reinforcement are not yet clearly understood, and may be very important for the future development of wave-mechanics; but they do not affect the major results, which are: first, the fact of the diffraction; and then, the agreement of the values of λ computed from the data by means of equation (3) with the values predicted by de Broglie. These predicted values are obtained by dividing the value of n , given in equation (1), into the value of u given in equation (2); we find:

$$\lambda = u/n = (E/\sqrt{2mE}) \div (E/h) = h/\sqrt{2mE} = h/mv \quad (4)$$

for since now we are dealing with free electrons, the potential energy (inserted into equation (2) in the form $-e^2/r$) is nil, and the total energy E is equal to the kinetic energy $\frac{1}{2}mv^2$ of the electrons. In general it is better to use relativistic dynamics, but in this case the distinction is not great enough to be felt in the experiments. In relativistic dynamics also, however, the wavelength predicted is equal to h divided by the momentum of the electron; and this is verified by the experiments of Davisson and Germer.

TESTING NEW SYSTEMS OF MECHANICS

Band Spectra.—A very extensive set of data available for testing new systems of mechanics is found in the work upon the band-spectra of diatomic molecules. So lately as three years ago, theoretical work upon these was almost confined to the discerning of the rotations and the vibrations which play a great part in them—rotations of the molecule as a whole, vibrations of the nuclei of its constituent atoms along the line which joins them. It was fully realized that these spectra also disclose stationary states which are to be interpreted as particular arrangements of electrons around the nuclei, like the stationary states of atoms; but these were still quite mysterious. They are now being interpreted at

a great rate, and many resemblances between them and the states of atoms have been uncovered; for instance, they are now classified into S, P and D sequences, like those of atoms. In representing these by models, one takes into account the angular momenta of the electrons in their orbits and the spin-momenta of the individual electrons; and a further step—the attribution of spin-momenta to the nuclei—has recently been made. In these problems the language and pictures of the Bohr-Sommerfeld theory are still customary; but the methods of the new mechanics have already been applied to the study of the molecular rotations of which the participation in band-spectra has long been known, and very promising results have already been attained; for instance, in explaining the alternation in intensity which is observed as one goes from line to line along a band, and the Zeeman effect of an applied magnetic field upon the lines whereof the bands are made. New analyses of band-spectra are continually being published in very voluminous papers. In this connection it is suitable to mention that the old problem of the trend with temperature of the specific heat of hydrogen gas has at last been solved.

The "complex" spectra—that is to say, all the spectra except those of hydrogen, helium, and the elements of the first two columns of the periodic table—are now being explored with great industry and with a better prospect of complete success than ever before. The progress in this field may be indicated by remarking that less than ten years ago, the spectrum of iron was still being mentioned in textbooks as one so horribly complicated that there was little likelihood of unravelling it; whereas now it is deemed comparatively simple, and spectra of atoms in every column of the periodic table have been successfully analyzed, and at present the campaign is being organized against the last and most difficult group of all—the spectra of the rare-earth elements. The theories of W. Pauli and F. Hund have been most helpful in these analyses;

indeed, one gathers that without them little progress could have been made. Unfortunately it is very difficult to grasp the exact content of these theories, and still more so to present them. As a rule they involve the picture of the atom as a nucleus surrounded by a congeries of electrons each describing an orbit governed by quantum-conditions; each orbit has a certain "total quantum-number," and a certain angular momentum; each electron has in addition a certain spin-momentum. The vectors representing these angular momenta in magnitude and direction are combined according to certain rules, and the permitted combinations are identified with the observed stationary states of the atoms. The rules of combination, however, can be preserved intact even if the meanings attached to the individual vectors are altered; in Hund's original theory they were not the same as those commonly accepted at present.

It is probably too early to foretell whether the present pictures are destined to be permanent. As an interesting side-issue, it may be mentioned that the "hyper-fine structure" of several lines in the spectrum of bismuth has been explained by invoking the spin-momentum of the nucleus. Here also it must be stated that the spectrum of helium—the great obstacle which the exponents of the Bohr-Sommerfeld theory tried vainly for many years to surmount—has at last been overcome by the methods of wave-mechanics.

Spectra of Ions.—Many of the spectra now being analyzed are those of ions—that is to say, atoms devoid of one or more of their normal quota of electrons. It is now possible to list quite a large number of sequences of ions having identical nuclear charges and differing numbers of electrons, and other sequences having the same number of electrons and different nuclear charges. The dependence of various features of spectra upon nuclear charge is a very important test of atomic theories. Formerly, this test could be made only from spectra—usually X-rays—of atoms possessing different nuclear charges and also different numbers of electrons.

The second sort of difference being absent in these newer data, they are much better suited for the purposes of theorists. The profusion of data lately acquired in this field seems to be due largely to improvements in the technique of ultra-violet spectroscopy. Here it may be mentioned that the famous "gap" between the ultra-violet and the X-ray region no longer exists, since wavelengths in this range have now been measured both by crystal spectrometry and with ordinary manufactured gratings.

Electrons in Metals.—Among the principles laid down by Pauli and used in the analysis of complex spectra, there is one for which two notable successes in other fields may already be claimed: the postulate that when an electron has taken a particular orbit in an atom (in this theory each electron-orbit is characterized by four quantum-numbers, one of which has to do with the spin-momentum) no other electron may take a similar orbit (one with the same four quantum-numbers). From this principle Pauli deduced the number of elements comprised in each of the consecutive periods of the periodic table; and upon it Fermi has lately based a new kind of statistics, applied *inter alia* to the electrons in metals. In the classical theory of electrons in metals, it is assumed that the velocities of these particles are distributed according to the well-known Maxwellian law; at the absolute zero, all the velocities vanish. In Fermi's theory the condition of each electron, in a piece of metal of any prescribed size, is specified by certain quantum-numbers; no two electrons may have identical values of all of these; at absolute zero their velocities cannot all vanish, and there is a discrepancy from Maxwellian distribution which gradually diminishes as the temperature is raised. Pauli has accounted in this way for the paramagnetism of the alkali metals, which is independent of temperature over the accessible range; and Sommerfeld has begun to apply these ideas to the phenomena long attributed to the conduction-electrons in metals—conduction of electricity and heat, thermoelectric effects, contact potential dif-

ferences, etc.—attaining striking agreements, with experience in some but not all cases.

ENERGY IMPACTS

Impacts between excited and unexcited atoms or molecules, and the transfer of energy which may occur at such an event, are now receiving much attention. For instance, it is now a well-established fact that an excited mercury atom colliding with a hydrogen molecule may transfer its energy to the latter and so dissociate it, although an electron possessing an equal amount of energy (in the kinetic form) and striking a hydrogen molecule cannot effect the dissociation. To break a hydrogen molecule into its constituent atoms by the impacts of (say) 5-volt electrons, it is necessary to mix the hydrogen with mercury atoms which can serve as intermediaries, or *catalysts*; for there can be no doubt that many of the phenomena comprised under the name *catalysis* are to be explained in this manner. This allusion shows how great the importance of this field of research may presently become.

The problems now encountered may be compared with the question of the relative intensities of spectrum lines. Knowing the energy required to dissociate the hydrogen molecule, we know how much energy an electron or an excited atom must at the least possess, in order to dissociate it; but we do not therefore know what is the possibility or the probability that the electron or the atom, once endowed with the requisite energy, will actually be able to do it. The problem of dissociation has several interesting aspects, and may be approached by analysis of band-spectra. It has been found, for instance, that a hydrogen molecule may exist in an excited state in which it contains three or four times as much energy as would suffice, if rightly applied, to break it up into two neutral atoms each in the normal state; and if, being in this excited state, it receives some additional energy of vibration, it will break itself into two neutral atoms, one being in its normal state and the other in an excited state. Direct impact of a fast electron against a mole-

cule seems always to act by driving an electron out of the molecular system; the constituent atoms may then be left so loosely bound that a collision with another molecule suffices to break them apart. "Active nitrogen" is now supposed to consist of nitrogen molecules in a certain excited state, although the controversy between those who hold this view and those who hold that it is atomic nitrogen may not yet be stilled.

TESTS IN RELATIVITY

Mention may be made in conclusion of the present status of two questions which have stirred the world of physics in recent years. Several experiments performed to test the foundations of the special theory of

relativity, with apparatus supposedly capable of detecting in some cases an ether-drift of one or two kilometres per second if such a one exists, have yielded results in strict consonance with the theory. Miller's observations therefore remain, for the present, unconfirmed. The indications that mercury had been transmuted into gold, and that hydrogen had been transmuted into helium, have all been shown fallacious. The transmutations effected by alpha-particles remain the only certain ones; concerning the number and extent of these, there is still controversy between the laboratories of Cambridge (England) and Vienna, which are the only ones where such experiments have been performed in numbers.

COGNATE SOCIETIES

AMERICAN MICROSCOPICAL SOCIETY.—Raleigh, N. C.

AMERICAN CHEMICAL SOCIETY.—1709 G. St., N. W., Washington, D. C.

AMERICAN ELECTROCHEMICAL SOCIETY.—Columbia University, New York, N. Y.

AMERICAN LEATHER CHEMISTS' ASSOCIATION.—22 E. 16th St., New York, N. Y.

AMERICAN PHYSICAL SOCIETY.—Columbia University, New York, N. Y.

AMERICAN SOCIETY OF BIOLOGICAL CHEMISTS.—Columbia University, New York, N. Y.

COPPER AND BRASS RESEARCH ASSOCIATION.—25 Broadway, New York, N. Y.

NATIONAL RESEARCH COUNCIL.—29 W. 39th St., New York, N. Y.

SOCIETY OF CHEMICAL INDUSTRY.—Pratt Institute, Brooklyn, N. Y.

SYNTHETIC ORGANIC CHEMICAL MANUFACTURERS' ASSOCIATION.—1 Madison Ave., New York, N. Y.

DIVISION XXII BIOLOGICAL SCIENCES

ORGANIC EVOLUTION

By W. E. CASTLE

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THEORY OF ORGANIC EVOLUTION

The subject of organic evolution continues to be one of great popular interest because of its philosophical, religious and social implications. It continues also to be a subject of general interest and of active investigation among scientists because it offers a consistent explanation of so many facts accumulated by observers and experimenters in all branches of the natural sciences. It is and has been for half a century the basic working hypothesis of practically all serious and unbiased study of the phenomena of life in its present as well as in its historical aspects.

Briefly stated the theory of organic evolution regards living things as produced by natural causes constantly in operation and supposes that the diversified forms of life now existing on the earth, or shown to have existed in past time by fossils imbedded in sedimentary rocks, were derived by descent with modification from preëxisting living forms, which in general were fewer in kinds and simpler in organization than their successors.

This idea stands in contrast to that of special creation which prevailed quite generally up to the middle of the last century, according to which living forms, as they now exist, have always existed immutable since they first came into being by a creative act of deity exercised only "in the beginning" and not subsequently.

APPLICATIONS

The idea of continuously operative creation has long been accepted in

astronomy, where heavenly bodies are nightly seen in all stages of transition from a condition of luminous incandescence to that of a cooled solid body like the moon, giving off only reflected light. Creation by continuously operative forces is also a principle long accepted by geologists, who see in erosion and sedimentation daily at work processes which result in the destruction of old land masses and the creation of new ones. Fundamental discoveries in physics and chemistry made largely within the last thirty years, indicate that even the inorganic elements are not simple and stable bodies as they were formerly supposed to be, but are complex products of evolution and subject to transformation into stages of either greater or lesser structural complexity under the operation of definite and unchanging laws. These revolutionary discoveries concerning inorganic bodies strongly support the idea of organic evolution previously and independently arrived at by naturalists.

Of course there are many unsolved problems concerning the mode of operation of organic evolution, the rapidity of its progress, and the extent to which its processes are controllable. To the study of these questions biologists are devoting themselves in unprecedented numbers and enthusiasm. The validity of the general principle of organic evolution, what the French call transformism and in English we call the theory of descent, this is at present scarcely questioned except by those who, without being thoroughly familiar with the facts,

shrink from the possible consequences of the theory in modifying existing human institutions.

DESCENT AND HEREDITY

The theory of descent is in substance the theory that new organic forms come into existence as descendants of previously existing similar ancestors from which, however, the descendants are in some respects different. Two processes here involved are receiving a great deal of study. (1) What are the laws of heredity which bring it about that descendants are similar to their ancestors? (2) How do descendants become different from their ancestors and why do they remain so? Or, in other words, how do heritable variations arise?

The study of heredity has made more progress in the last sixty years than in all the previous centuries. We now know what the vehicle of heredity is, that in all the higher animals and plants it consists of a single cell furnished by either parent. The new individual develops from a single egg cell furnished by the mother, which unites with a single sperm cell furnished by the father. The new individual inherits in equal measure the qualities of its mother and of its father. Primarily, then, the vehicle of inheritance is a single cell. It is a material body, an organic structural unit of the parent set apart for reproduction. So much has been known for nearly seventy-five years.

CHROMOSOMES AND GENES

More recent is the knowledge that a particular part of the cell, the chromosomes within its nucleus, are the chief if not the exclusive vehicle of inheritance. These chromosomes are themselves composite structures, consisting each of a chain of bodies perhaps no larger individually than an enormous organic molecule.

The hypothetical material components of a chromosome are known as genes, gene being a name for the smallest (as yet) discoverable unit in the inheritance of the visible characters of an organism. Genes, which

are inherited in accordance with Mendel's law, are known to determine among other things the color of the hair of a mammal, whether black, brown, yellow, or white; the structure of the hair, whether long or short, curly or straight; in plants genes determine the colors of flowers, the structure of leaves, whether smooth or hairy, notched or even, etc.

It is supposed provisionally that all inheritance is through the agency of material genes, which are located exclusively in chromosomes and are arranged there in a linear chain. The foundation of the chromosome theory as to the location and transmission of genes in the germ cells was established firmly by T. H. Morgan and his pupils in their studies of inheritance in the fly *Drosophila*. It is strongly supported, in the case of plants, by studies of Blakeslee and Belling on the heritable variations and chromosome aberrations of the Jimson weed, *Datura*. Confirmation is also had for the theory in studies made on mammals at the Bussey Institution of Harvard University, where it has been shown that certain unit-characters of coat and eye-color or of hair structure are inherited in linkage groups, as necessitated by the chromosome theory, characters whose genes lie in a common chromosome being linked; that is going together in transmission so long as the linkage is unbroken.

APPLICATION TO TRANSMISSION OF LIFE

In the light of the chromosome theory, the reason why offspring resemble parents is because they contain the same genes handed on to them in the chromosomes of the germ cells. It is further necessary that these genes exercise their influence on the same kind of cell plasma which exists in the egg of the species, and that the egg develops under the same kind of environmental influences as the parent organism. A normal environment is as necessary for the production of normal offspring as is a normal complement of genes. A mammal's egg must develop within the maternal body, a bird's egg in a nest

incubated by the body heat of a parent, or in an artificial incubator kept at the temperature and humidity of a nest in nature. Much study is being devoted to the environmental conditions necessary to the development of organisms, but these studies in no sense militate against the primary importance of genes borne in the chromosomes as vehicles of inheritance.

HERITABLE VARIATION

Just as the persistence of genes from generation to generation serves to explain heredity, so changes in genes serve as an explanation of heritable variation. If a gene changes in transmission from parent to offspring, then the genetic constitution of the offspring will be different from that of the parent, and in due time this genetic change will gain expression in the race in accordance with Mendel's law. Change in a single gene may produce a change in only one of the visible characters of an organism (a unit character change) or it may serve to produce only a quantitative modification of some character of the organism. Such single-gene changes are known to the Morgan school as "point mutations." They offer the simplest and clearest illustrations of the workings of Mendel's law, and have occupied a large share of the attention of students of heredity during the past quarter century. Recently, however, an increasing amount of attention has been given to the study of genetic changes involving whole chromosomes, which necessarily influence simultaneously a large number of characters, since each chromosome contains many genes.

LOSS IN GERM CELLS

By an accident in cell division, or for some other unknown cause, an entire chromosome (or a large part of it) may be lost from an individual germ cell. Such a germ cell will not transmit the genes contained in that particular chromosome or part chromosome. Such genes may not be indispensable to the organism, though usually loss of a single chromosome seriously enfeebles the or-

ganism. Such occurrences substantiated both from the breeding performance of the progeny and from a microscopic study of the chromosomes are known for *Drosophila*, *Datura*, and the house-mouse. Much commoner is the duplication of an entire chromosome, which makes certain genes more effective or differently effective than in their normal state. Such cases are known for *Oenothera*, *Datura* and *Drosophila*, both from cytological and from genetical evidence.

DIPLOIDS AND TETRAPLOIDS

Finally all the chromosomes of a germ cell may become duplicated, a condition known as diploidy, and most frequently found in plants, where it may be artificially induced by low temperatures or anaesthetics. If a diploid egg-cell is fertilized by a diploid sperm cell, a condition known as tetraploidy results, and races breeding true to the tetraploid state are known in many plant genera. It is thought that new species have frequently originated in this way, for a tetraploid plant differs in a great many structural details, chiefly of a quantitative character, from the diploid from which it may have arisen. Each may breed true by itself, but it is to be noticed that crosses of the two usually produce a largely infertile progeny.

Hybridization between species of the same genus but having different numbers of chromosomes is believed, on direct experimental evidence, to have had an important part in the evolution of species among flowering plants. This view is supported by recent studies made by a number of American botanists, as well as by their European and Japanese colleagues, on roses, strawberries, blueberries, and wheats. Among cultivated wheats, for example, there are species characterized by different multiples of chromosomes of the fundamental number seven. Varieties having the same chromosome number will cross readily and produce fertile hybrids; those with different chromosome numbers behave like distinct species and produce hybrids for the most part sterile.

NEW SPECIES

But an entirely new species may occasionally arise from the crossing of two species of unlike chromosome number if, previous to the ordinary reduction division, there occurs in the hybrid incomplete cell division in which each chromosome is duplicated. The hybrid state is then perpetuated in ordinary sexual reproduction. This is not a matter of speculation but an actually demonstrated occurrence observed, for example, in the crossing of species of tobacco at the University of California. The origin of a group of organisms, which meets every valid criterion of being a new species, is accordingly no longer a matter of conjecture but a demonstrated fact. Whether such new species would be able to survive in nature would be determined by natural selection. It is believed that only such species can, in general, survive as are better adapted to the environment in which they are placed than any other competing forms.

EFFECT OF X-RAYS

Attempts to control or induce genetic changes have for some years been in progress in American biological laboratories. Mavor was the first to show that a process by which a chromosome becomes duplicated in the germ-cells of *Drosophila* can be made to occur more frequently than normally by treating the parents with x-rays. In the past year H. J. Muller has reported the production in *Drosophila* of numerous point mutations as well as chromosome aberrations resulting in heritable mutations by the use of x-rays. It seems possible, in the light of these results, that the normal process of genetic mutation is molecular reorganization within a gene, or a chromosome, and that such reorganization can be induced artificially by x-rays and other environmental agencies.

The study of organic evolution will, perhaps, now pass from an observed and verified phenomenon to one controlled in a measure and utilized by man.

VERTEBRATE ZOOLOGY

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MORPHOLOGY

Anatomical.—During the past year a number of important contributions have been made to our knowledge of the microscopic anatomy of the vertebrate body. The details of development of the skeleton of the white rat have been described by A. B. Dawson (*Anat. Rec.*, vol. 34), and the post-natal growth of the skeleton of the fowl has been followed by Latimer (*Amer. Jour. Anat.*, vol. 40). Chase has confirmed the accepted ideas as to the structure of the enamel of the teeth (*Anat. Rec.*, vol. 36) and shown that Nasmyth's membrane of the erupting teeth consists of remnants of the cells from which the enamel is formed plus the superficial gingival epithelium. Membranes present on adult teeth are bacterial growths and are not identical with Nasmyth's membrane (*idem*, vol. 33). Growth

of teeth in the adult albino rat has been measured by Donaldson and French, who have found that dentin alone is responsible for increase in size (*idem*, vol. 34). The fibrils which innervate the pulp of the teeth have been traced to certain cells in the ganglion of the fifth cerebral nerve (Windle, *Jour. Comp. Neurol.*, vol. 43).

The detailed anatomy of the internal ear of the guinea pig has been described by Guild (*Amer. Jour. Anat.*, vol. 39). He has found that there is a definite circulation of the endolymph from the cochlear duct to the endolymphatic sac. Boyden, from an examination of 10,000 domestic animals and reports covering 19,000 human bodies, finds that the incidence of accessory gall bladder is 1:8 in animals such as cats and only 1:4000 in man. The explana-

tion of the numerical differences in this anomaly between cat and man probably is correlated with differences in the anatomical relationships of the primordia from which the gall bladder arises (*idem*, vol. 38). Stewart has given a detailed description of the kidney of the frog (*Anat. Rec.*, vol. 36). This investigation is of great benefit to physiologists who use this animal in the study of renal functions.

Blood and lymphatic tissues have been intensely studied by several investigators. Jordan (*Amer. Jour. Anat.*, vol. 38), and Jordan and Looper (*ibid.*) have presented further histological evidence for Jordan's earlier conclusion that the lymph nodes have erythrocytogenic capacities. A. B. Dawson, from a study of irradiated lymph nodes of dogs, supports Jordan's suggestion that lymph stasis is the causative agent in the modification of lymph nodes leading to red blood corpuscle differentiation (*Anat. Rec.*, vol. 36). Hemal nodes studied in the light of these investigations reveal stages which are comparable to involuting lymph nodes and are thereby concluded to be so derived (Jordan, *Jour. Morph. and Physiol.*, vol. 44). Foot shows that the reticulum of the human spleen is continuous with the connective tissue trabeculae (*Anat. Rec.*, vol. 36).

The demonstration of the continuity between venous channels and reticulum spaces in the bone marrow of the frog, together with the observation of developing red blood cells in these spaces, contradicts the current view that erythrocyte formation cannot take place outside of endothelial-lined channels (Jordan and Baker, *idem*, vol. 35). Denial of the possibility of endothelial cells to change into wandering cells in the capillaries of the tail of the tadpole is made by E. R. and E. L. Clark on the basis of their studies of this region in the living animal (*idem*, vol. 36). Elastic tissue has been shown to be relatively more abundant in the heart of the aged than of the young, from which fact it is concluded that elastic tissue is developed as the heart muscle diminishes in power (Miller

and Perkins, *Amer. Jour. Anat.*, vol. 39).

Jordan and Horsley, from histologic study of the thymus gland, conclude that Hassal's corpuscles arise by process of an hypertrophy of endothelial cells of obliterating precapillary arterioles (*Anat. Rec.*, vol. 35). Jaffe and Papanicolaou give a description of the first case of true hermaphroditism in the guinea pig (*idem*, vol. 36). This condition is very rare in mammals. The animal described has internally male organs on one side, female on the other, and externally it has female characteristics.

CYTOLOGY

Chromosome studies have been made by Hance in the fowl (*Biol. Bul.*, vol. 51). He finds that the chromosomes of the somatic cells are morphologically like those of the germ cells, and that the eggs are all alike as regards chromosome number, while the sperms differ. Werner has found 76 chromosomes in the germ cells of the male indian runner duck and 77 including an unpaired "W" chromosome in the female germ cells (*idem*, vol. 52). Cox finds 40 chromosomes in the spermatogonia of the common house mouse. The sex chromosomes are of the usual X-Y type (*Jour. Morph. and Physiol.*, vol. 43). Painter describes 44 chromosomes (including an X-Y group) in the spermatogonia of the rabbit (*ibid.*). According to Foley spermatogonia of mud minnows are seasonally restored by the stroma cells of the testis (*Anat. Rec.*, vol. 35). In contrast to this Hann states that in the ruffe fish the primordial germ cells originate from giant endodermal cells and that definitive sex cells have their origin only in primordial germ cells (*Jour. Morph. and Physiol.*, vol. 43).

Honda presents information regarding the chemical, physical and genetic relationships of mitochondria of submaxillary glands of albino rats (*Anat. Rec.*, vol. 34). He states that these mitochondria are best stained in acid media, that they can withstand heat, differ chemically in different parts of the cell, and arise from the nucleus. Cell division in

ciliated cells of the tadpole esophagus has been studied by Kindred (*Jour. Morph. and Physiol.*, vol. 43). He concludes that since mitosis as well as amitosis occurs, ciliated cells cannot be regarded as lacking centrosomes. Burrows, from observations of cell division in heart muscle and mesenchymal cells of the chick grown in vitro, suggests that mitosis is caused by retention of a protein coagulant which acts upon the cytoplasmic and nuclear constituents and produces the mitotic figure with its characteristic phases eventuating in cell division (*Amer. Jour. Anat.*, vol. 39).

EMBRYOLOGY

Higgins and Sheard find that the normal development of frogs' eggs is disturbed by ultra-violet rays (*Jour. Exp. Zool.*, vol. 46). The nervous system and sense organs are the parts particularly affected. Hinrichs (*idem*, vol. 47) reports similar abnormalities in chick embryos and suggests that the anomalous condition is the result of derangement of the preprimordial organization. Hyman's experiments with lethal agents on chick embryos bear out this conception, showing that even before any primordia appear the different regions of the future chick present different degrees of metabolic activity (*Biol. Bul.*, vol. 52). She has also shown that the changes in the shape of the developing heart are produced by localized areas of cellular activity rather than by mechanical factors.

Brunschwig shows that iron salts injected into pregnant rats are absorbed from the uterus by the yolk sac and not by the fetal placenta proper (*Anat. Rec.*, vol. 34). Kampmeier and Birch give the first description of the development of the venous valves in man (*Amer. Jour. Anat.*, vol. 38). E. G. Butler, in continuing his studies of the origin of the mammalian vena cava inferior, suggests that the various modifications of development of this vein in different mammals are caused by differences in degree of development of the mesonephroi (*Amer. Jour. Anat.*, vol. 39). Kingsbury and Rogers trace the development of the palatine tonsil

of the calf from the ventral end of the second branchial pouch (*idem*, vol. 38). Rogers followed the origin and fate of the ultimobranchial bodies in the white rat (*idem*, vol. 38). He finds that after their origin from the third branchial pouches they unite with the median thyroid primordium and gradually change into colloid-containing acini indistinguishable from those of the thyroid proper. Covell (*ibid.*) has followed the growth of the hypophysis cerebri and the hypophyseal fossa in human fetuses and reports that in a full-term fetus the glandular portion derived from the primitive stomodeum preponderates in mass as compared with the component derived from the brain.

According to Detweiler, who has made a number of studies on cellular potentialities of the spinal cord of larval amphibia, cell proliferation in a transplanted piece is not regulated by its new position, but by its inherent capacity for proliferation (*Jour. Comp. Neurol.*, vol. 43). Addison and Rademaker (*idem*, vol. 44), from a comparison of the rate of increase during development of the vomeronasal organ of the white rat with that of the eye, find that the rates are relatively the same and hence attribute a sensory function to the vomeronasal organ. Lehmann, after a series of experiments involving removal of mesodermic somites from amphibian embryos, finds that the spinal ganglia corresponding to the excised somites do not develop (*Jour. Exp. Zool.*, vol. 49). Hence he concludes that the median surface of the somite stimulates the development of spinal ganglia.

Hughes describes sex intergrades in fetal pigs in which the female is modified along the lines of the bovine free martin. It is assumed that the causative agent for the modification of the female enters from a male twin with which the modified female has a common circulation (*Biol. Bul.*, vol. 52). The sex of parabioc twins in frog embryos has been studied by Witschi, who, from a series of grafting experiments in which there is evidence of sex reversal, concludes that the female tends to un-

dergo reversion and that the male differentiating factor produces this change (*ibid.*). Willier, on the other hand, finds that indifferent gonads from immature chicks grafted into developing male or female host chicks are not modified themselves and have no modifying effect on the sex of the host. He concludes, therefore, that in the chick there is no sex inhibitor (*Jour. Exp. Zool.*, vol. 46).

EXPERIMENTAL ZOOLOGY

Starvation and Tissues.—The relative differences in the effect of starvation on similar tissues in different animals is shown by the diverse results obtained in starvation of rats and eels. Distortion and destruction of the duodenal epithelium follows 24 hours of starvation in the mouse (*Sun. Anat. Rec.*, vol. 34), while there is no destruction of the epithelium of the alimentary tract of eels after 657 days of starvation (D'Ancona, *Amer. Jour. Anat.*, vol. 39). Beckwith, in a series of interesting experiments, has shown the importance of the lens in the development of the eye (*Jour. Exp. Zool.*, vol. 49). The experiments were done on salamander embryos. In animals from which the lens primordium was removed and replaced by branchial ectoderm no lens developed, but in about 25% of such individuals a new lens was formed from the dorsal rim of the iris just as it does in older animals from which the lens has been removed. Furthermore, the choroid fissure does not close in the absence of a lens, nor does vitreous humor form in lensless eyes.

Other Experiments.—Nonidez and Goodale describe the changes in the

size of parathyroid glands in chicks deprived of ultra-violet light (*Amer. Jour. Anat.*, vol. 38). These glands hypertrophy, become hyperplastic and much larger than normal. Speidel has shown that in frog-tadpoles treated with thyroid extract the epidermal cells lose certain characteristic larval features and are replaced by epidermal cells characteristic of the frog. Thyroid extract, therefore, hastens those changes which are characteristic of the epidermis at metamorphosis (*Jour. Morph. and Physiol.*, vol. 43). Potter, by a series of ingenious experiments, has shown that the swim-bladder is necessary for respiration in *Lepidosteus*, the garpike (See *Jour. Exp. Zool.*, vol. 49).

From a study of 102 fowls which were completely ovariectomized Domm found that the right gonad, normally rudimentary, grows large and forms a testis-like organ (*idem*, vol. 48). Histologically this gland has no male germ cells, but the fowls so operated on become males as regards plumage, spurs, crowing, and reaction to females. Horning and Torrey have shown that feeding desiccated thyroid gland extract to normal and castrated male fowls conspicuously darkens the plumage, but has little effect on females (*Biol. Bul.*, vol. 53).

Kinder has studied the nest building activity of the albino rat (*Jour. Exp. Zool.*, vol. 47). She has found that both males and females build nests and that they are more active as builders when the environment is cold than when it is warm. Females are more active following the birth of young, and the activity is correlated with the estrous cycle.

INVERTEBRATE ZOOLOGY

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PROTOZOA

Studies on the Protozoa continue to command prominent place in the American literature on Invertebrate Zoology. The literature on parasitic

Protozoa will be considered in the section dealing with Parasitology.

Contractile Vacuoles.—The perennial question of contractile vacuoles or excretory organs in the Protozoa has received its usual attention. H.

C. Day (*Jour. Morphol. and Physiol.*, vol. 44) has maintained that the loci of the vacuoles in *Amœba proteus* are not permanent but are formed more or less at random. In "*Paramecium caudatum*," J. H. Weatherby (*Biol. Bul.*, vol. 52), by micro-injections, he introduced reagents directly into the vacuoles as tests for ammonia and urea. He concludes that only a small portion of the urea found in old cultures is excreted by the contractile vacuoles.

Morphology and the Life Cycle.—C. D. Beers (*Biol. Bul.*, vols. 43 and 44) has contributed to the knowledge of the ciliate *Didinium*. He finds that metabolic by-products of *Didinium* facilitate encystment in the absence of food though the by-products of *Paramecium* inhibit encystment. In a later study he found that encystment takes place under that range of chemical conditions which are most favorable for growth. High acidity and alkalinity alike inhibit encystment of this ciliate.

In attempting to study conditions favorable for prolonging life of a protozoan, Mary L. Austin (*Jour. Exp. Zool.*, vol. 49) found it possible to retard or to accelerate division rate of *Uroleptus mobilis* but failed to devise conditions for appreciably prolonging life of the individual.

Control of ciliary action in *Paramecium caudatum* has been explained in terms of physical and chemical reactions by S. O. Mast and J. E. Nadler (*Jour. Morphol. and Physiol.*, vol. 43) who find differential adsorption of the cations and subsequent changes in electric potential among the factors involved.

MORPHOLOGY AND DEVELOPMENT OF THE METAZOA

Nervous System and Sense Organs.

—W. R. Coe has recently made an intensive study of the aberrant group of deep sea nemerteans. Though the entire group of nemerteans has been the topic of much discussion as to relationships the forms from the open ocean are still more bizarre. In his paper on the nervous system of the pelagic nemerteans, Professor Coe (*Biol. Bul.*, vol. 53) has described a dorsal nerve with metameric ganglia,

a condition wholly unknown previously in this group and extremely rare in any of the invertebrates. In these peculiar forms adapted to pelagic life he found the sense organs characteristic of their shore relatives rudimentary or lacking (*Amer. Nat.*, vol. 61).

Circulatory System.—In studying the blood vessels of annelids, H. Federighi (*Proc. Natl. Acad. Sci.*, vol. 13) found that the contractile blood vessels of *Nereis virens* are closely comparable to the vertebrate capillaries both histologically and physiologically.

General Embryology.—It has long been known that many of the snails are hermaphroditic and that the same gonad produces both male and female germ cells. The anatomy of the reproductive organs and the methods of fertilization in snails have been but imperfectly known. E. D. Crabb (*Biol. Bul.*, vol. 53) has studied the anatomy and functions of the reproductive system in one of the large snails of the genus *lymnæa*. He found that germ cells of both sexes pass out through both sets of reproductive canals thus rendering cross fertilization improbable if not impossible in this snail.

R. Chambers and H. Pollack (*Biol. Bul.*, vol. 53) introduced indicator dyes by means of a micro-injection apparatus, into the blastocoel of various normal echinoderm embryos. Contrary to the findings of previous investigators, when this was done without injury to the embryo the fluid of the cavity gave the same color reactions as the surrounding sea water.

Experimental Embryology.—The subject of the organization of the egg, before development is initiated, has been attacked again. H. H. Plough (*Biol. Bul.*, vol. 52) has found by experimentation that sea urchin eggs have the skeletal forming material in the vegetative half of the egg. The first cleavage may cut this material at various angles resulting in an unequal distribution of the skeletal-forming material to the blastomeres. Some embryos developed from isolated blastomeres entirely lacked skeletal structures.

Anæsthetized eggs of the sea urchin are capable of fertilization according to the findings of R. Blumenthal (*Biol. Bul.*, vol. 52) but cell division is delayed until the effect of the narcotic has disappeared. G. T. Popa (*Biol. Bul.*, vol. 52) has given a microchemical analysis of *Arbacia* and *Nereis* spermatozoa. By intravital staining and specific staining of fixed materials he demonstrated a cytoplasmic layer rich in lipoids surrounding the nucleus and axial filament of the sperm cells. This lipid layer assumes different relationships in the sperm head at different times related to functional stages and to changes in the medium.

Regeneration and Polarity.—In studying regeneration in *Lumbriculus*, L. P. Sayles (*Biol. Bul.*, vol. 52) has found that all of the cells taking part in the formation of new tissue have large nucleoli. His observations led him to the general statement that the amount of nucleolar material in the cell seems to be an index of the activity of the nucleus.

Polarity and symmetry may be decreased or obliterated, so far as influence on development is concerned, when stems of pieces of *Corymorpha* are subjected to ethyl alcohol or to certain other chemicals including caffeine. C. M. Child (*Jour. Exp. Zool.*, vol. 48) has found that upon recovery from such conditions entirely new polarities may be established.

PARASITOLOGY

Parasites of Man.—R. W. Hegner, in his new book entitled "Host Parasite Relations between Man and His Intestinal Protozoa" (Century), attempts to bring together the biological and medical aspects of Protozoology, seeking as the unifying element the relations which exist between the parasites and their hosts. All prevention as well as all intelligent treatment must be based upon a knowledge of such relationships.

W. A. and Lucy G. Taliaferro have devoted several years in an attempt to devise a precipitin test for diagnosis of malaria. A preliminary report of their results has been presented (*Jour. Prev. Med.*, vol. 1). This indicates the possibility of per-

fecting a satisfactory test to demonstrate infection with malarial organisms.

General Parasitology.—Eloise B. Cram (*U. S. Natl. Mus., Bul.* no. 140) has contributed an invaluable aid to the students of bird nematodes. In this work over five hundred species are described and figured. These represent about fifty genera. As parasites of domestic and game birds some of the species here treated have great economic importance.

The determination of the validity and synonymy of the species considered in Leidy's pioneer work is a real service to science. The paper entitled "Certain Interrelations between *Plasmodium præcox* and its Host" by E. Hartman (*Amer. Jour. Hyg.*, vol. 7) gives a biometric study of the malarial organism in the canary. This paper is a good example of the modern approach to the problems of Host Parasite relations.

ECOLOGY AND DISTRIBUTION

Seashore Life.—The seashore life of the Pacific Coast has been relatively unknown except through the special literature dealing with individual groups and locations. A popular work of exceptional merit and of distinct scientific value has appeared within the current year. Myrtle Johnson and H. J. Snook in their *Seashore Animals of the Pacific Coast* (N. Y., Macmillan, 1927) have given a beautifully illustrated and interestingly written account of the teeming life of the seashore.

The Plankton Forms, which have such importance in the economy of nature, have in the past received scant attention except on the systematic side. There have been two important contributions dealing with the fresh-water plankton crustacea. A. B. Klugh has published (*Trans. Royal Canadian Inst.*, vol. 16) an extensive series of observations and experiments on fresh-water *Entomostraca* in which he has pointed out the fact that success in the culture of these forms as fish food depends upon full knowledge of life histories and food relations. In their studies on the life of Wisconsin Lakes, C. Juday and E. A. Birge (*Ecology*, vol.

8) have given a summary of their work on the breeding seasons, and vertical distribution of Pontoporeia and Mysis, both of which have long been considered as marine relicts.

In a series of articles (*Jour. Exp.*

Zool., vol. 48; *Quart. Rev. Biol.*, vol. 2; *et al.*) W. C. Allee has revised the question as to the causes of organisms grouping themselves together under conditions of nature as well as in the laboratory.

VERTEBRATE PALEONTOLOGY

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General.—Vertebrate Paleontology deals with the record of the animals which have a backbone. It ranges from their appearance as fishes some hundreds of millions of years ago in the Devonian rocks; through the changes consequent to their coming from the water onto land thus becoming Amphibians and reptiles, through their adaptations to flying in the air; through the enlargement of their brain and the increased care of the young as they develop into mammals. Then to the final stage when man-like forms appear; and also with those early traces of man which are found buried in the rocks. The foundation of the subject rests on finding remains of the animals which lived in the past, the first traces being usually fragmentary; but continued search usually reveals one complete skeleton after another, and along with data to show the conditions of life at the time the skeleton was represented by a living animal. Further research undertakes to reconstruct the life and living conditions of one period after another by assembling the knowledge gathered and preserved in the numerous museums. Lastly similar survey work undertakes to build up the history of each form from the time distinguishing characters arise, through its period of flourishing, and then to its extinction, or to its living representatives.

Exploration.—The first line of work consists of exploring for new fields, and intensive collecting in the fields already found, to increase the amount of material for study. This year no new fields have been found. The Mongolian area could not be reached on account of the Chinese

wars. However there have been many expeditions in the field in various parts of the world. The British Museum is collecting dinosaurs in Tanganyika, where formerly the Berlin Museum operated, when that region was German East Africa. The Field Museum of Chicago has continued its search in Patagonia for the strange forerunners of the sloths and armadillos, and that host of peculiar South American animals which disappeared when that continent was united to North America in the Pliocene.

College Expeditions.—In this country Princeton had a party in the Big Horn Basin, which found among other things a considerable part of a great flightless bird roughly similar to a moa. It may be another *Diatryma*. They also found the skeleton of *Palaeonictis*, one of the extinct Eocene carnivores. Amherst College had a party in the Oligocene west of the Black Hills which collected a complete camel of that period and several *Titanotherium* skulls. The same region was also worked by George Sternberg who found a skeleton of *Titanotherium*; and in the overlying beds a skeleton of the horse *Parahippus*. This horse goes to the National Museum, and the rest of his collection to California Institute of Technology. Chicago University Museum was also working in the same general region.

Museum Activities.—The National Museum made a third trip to the Grand Canyon and secured a further series of tracks of Triassic animals, bringing up the list of animals so known to 30 species. The California Institute of Technology collected further material from the new locali-

ties for tar pits at McKittridge, California. The work of surveying and relating the finds from the John Day Basin in Oregon was carried still further under the direction of the Carnegie Institution. The Denver Museum is devoting itself especially to man in the Pleistocene, and has found three localities where flint tools were associated with the bones of extinct mammals.

At Folsom, New Mexico, and at Frederick, Oklahoma, flint tools were found with the bones of extinct species of bison, which have been interpreted as Pleistocene. At Colorado, Texas, there were worked flints with bones of bison, horse and camel, which would indicate early Pleistocene. The American Museum devoted another summer, the fifth, to search for material representing the "Pliocene man," previously indicated by the tooth names *Hesperopithecus*. The result of this expedition was to add more material to that already accumulated in the shape of bone fragments which appear to have been worked into crude tools or ornaments.

Collections.—Our knowledge of the animals of the past was advanced by the completion of the preparation of various earlier collections and the mounting or describing (or both) of various complete skeletons. To the considerable series of complete fossil horses already known, Romer added the long-legged "forest horse," *Anchitherium agatensis*, from the Lower Miocene. The National Museum after four years of work, has completed the preparation of its big dinosaur, *Diplodocus*, from Utah. R. Kellogg has prepared and described another skeleton of a porpoise from Maryland.

Sinclair has mounted in the Princeton Museum a complete skeleton of *Hyaenodon cruentus*, one of the powerful, though small brained, carnivores of the Oligocene; also the type specimen of *Theosodon*, one of the pseudo-horses from Patagonia. The American Museum in New York has moved its great collection of dinosaurs to a new hall prepared especially for it; and the great collection of fossil vertebrates from Samos and the Siwalik Hills of India has been prepared out so that American stu-

dents now have adequate material for study of these faunas from southern Asia and Europe; perhaps better than will be found anywhere else.

Studies.—Among the outstanding studies to be published this year may be mentioned Broile's new picture of *Rhamphorynchus*, the long tailed pterodactyl, which he shows had webbed feet like a duck. But stranger still is his description of this same reptile from the specimen in the Dresden Museum which seems to show hair on the head, neck and parts of the wing membrane; the first suggestion of any reptile to have hair. Miss Pearson completed a study of the otic region of primitive artiodactyls, showing among other things that the American *Perchoerus*, though so similar in outward appearance to *Potamotherium*, is essentially a peccary, while the latter is a true pig.

Jean Piveteau has described a number of tailless amphibians (frogs and toads) from the Paris Museum. In the National Museum, C. W. Gilmore has completed his monograph of the fossil lizards of North America; bringing together all our knowledge of these forms for this continent. O. P. Hay brought out his "Pleistocene of the Western Region of North America and its Vertebrate Animals," this being the third and final volume of his survey of the vertebrates of the Ice Age. This writer has also completed his second bibliography and catalogue of the vertebrates of North America, which supplements the original catalogue that started at the beginning and brought the literature down to 1900. This brings the catalogue to the present. It is to be hoped it will be published promptly as it is used by every student of the subject.

Ancestry of Man.—This year the ancestry of man has occupied the center of the stage. W. K. Gregory and M. Hellman have brought out a detailed study of the Dentition of *Dryopithecus* and the Ancestry of Man in the *Anthropological Papers* of the American Museum, which may well be taken as the starting point of a serious study of this problem. A more popular account is found in W. K. Gregory's *Man's Face, from*

Fish to Man. In contrast to this sort of a study H. F. Osborn, in a paper before the New York Academy of Science, suggested a new human culture; a bone age of man, based on the material accumulated through four years of collecting in western Nebraska. Here among thousands of bone fragments and teeth of horses and camels, have been found some 200

bone pieces which seem to be pointed, cut and drilled, presumably by a primitive stage of man. The site of the find appears like an ancient refuse heap where the larger bones had been broken to get the marrow. When, and if, this find is confirmed we will have a human culture dating from the Pliocene; and, rather unexpectedly, in America.

BOTANY

BY J. M. GREENMAN

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No outstanding discoveries in the field of botany have been recorded during the year 1927, yet marked advance in our knowledge of the subject characterizes practically every branch of botanical science.

BOTANICAL SOCIETIES MEETING

The annual meeting of the American Association for the Advancement of Science, including its Botanical Section, together with the affiliated societies inclusive of the Botanical Society of America and other organizations dealing with the plant sciences, was held in Nashville, Tenn., during the last week in December. To this meeting botanists from all parts of the United States and Canada assembled, and a large number of original papers was presented covering nearly all phases of botanical research. It is noteworthy that among outstanding papers presented at this meeting those resulting from investigations in which the X-ray played an integral part occupy a position in the foremost rank.

MORPHOLOGY

Publications in this field have been rather numerous, although confined mostly to current numbers of the several periodicals. The wide range of subjects investigated and some of the results obtained may be indicated by the following: J. S. Karling, "Variations in the mature antheridium of the Characeæ, a descriptive study in morphogenesis"; J. Hein, "Studies

on morphogenesis and development of the ascocarp of *Sphærotheca castagnei*." Bryan has recorded that abnormal sex organs are apparently regularly formed in *Mnium medium*. Sex organs were found which link together antheridia and archegonia. Pickett and Thayer have contributed to our knowledge of the life history of certain ferns, particularly the gametophyte development of *Polypodium vulgare* and *pellæa densa*.

Schaffner presents two interesting studies under the titles "Ginkgo, a flowerless plant" and "Extraordinary sexual phenomena in plants." Quisumbing and Juliano have investigated certain stages in the development of cocoanut; their results are presented in the *Botanical Gazette* under the title "Development of the ovule and embryo-sac of *Cocos nucifera*." Beatrice Nevius has studied "The development of the macrogametophyte of *Furcraea andina*." Seed development and germination have received attention, the former by McDonald, whose findings are recorded under the title "A study of seed development in three species of *Erigeron*," the latter by Adams under "The germination of seeds of some fleshy plants."

Histological Investigations have been pursued during the year, among them are: Skutch, "Anatomy of the leaf of banana, *Musa Sapientum* L."; Quisumbing, "The occurrence of lactiferous vessels in the mature bark of *Hevea brasiliensis*"; Aldaba, "The structure and development of the cell

wall in plants I. Bast fibers of *Boehmeria* and *Linum*"; Anderson, "A microchemical study of the structure and development of the flax fibers"; and Tupper, "A comparative study of Lauraceous woods." Here also should be mentioned Ballard's "The elements of vegetable histology," second edition, which presents a rather elementary but clear clean cut treatment of vegetable anatomy.

PHYSIOLOGY

Mosaic Phenomena. — Numerous and varied researches have been pursued in physiology. The mosaic phenomena have continued to hold the attention of many physiologists. Kraybill and Eckerson have investigated the tomato mosaic; they observed that "the mottling principle of tomato mosaic did not pass through the fritted gas filters when colloidal substances were present in the juice, but did pass through in part when the colloids had been partially removed before filtration." Goldstein presents a paper on "The x-bodies in the cells of *Dahlia* plants affected with mosaic disease." Johnson proposes a classification of plant viruses. S. Prát has continued the work on the toxicity of tissue juices. He shows that cells from potato and certain other plants "can live on tap water or diluted sea water much longer than in their own juice, so that the expressed sap may be regarded as toxic."

Light Rays and X-Rays. — The effect of light rays and X-rays on the growth of plants has continued to be a fertile field for investigation. In this connection it is interesting to observe that the work of Goodspeed and of Muller has been not only simultaneous but more or less parallel, one in the field of botany, the other in zoology, with similar results, namely, to accelerate the natural evolutionary processes. The effect of ultra-violet rays on plants likewise has continued to be an important topic for investigation. In this field students will find the second printing (1927) of Luckiesch's "Ultraviolet radiation: its properties, production, measurement and applications" of value for reference.

Experiments. — Farr has carried on rather extended experiments on the growth of root hairs in solutions, particularly for determining the rate of their elongation under different conditions. Shreve and Stahl have published a short paper on "Constant rates of continuous renewal for plants in water cultures." Under the title "The periodic fruiting of *Dictyota* and its relation to the environment" Hoyt contributes to the rather voluminous literature on periodicity in plants. A very interesting phase of temperature relations is brought out by Buchholz and Blakeslee in a paper entitled "Pollen-tube growth at various temperatures" in which they found that in the case of *Datura Stramonium* "the optimum temperature for pollen-tube growth was somewhere near 33.3 C."

Among the many contributions dealing with mineral nutrients and non-nutrient elements space permits mention only of a few. Deming considers "The effect of small amounts of chemicals in increasing the life activities of plants." Hopkins and Wann in an article entitled "Iron requirements for *Chlorella*" have presented a method of removing from culture solutions apparently the last traces of iron. Brenchley and Warrington in England have investigated the subject of "The rôle of boron in the growth of plants," and Collings in America has published on "The influence of boron on the growth of the soy-bean plant." The consensus of opinion appears to be that boron in small quantities is essential for the proper development of many of the higher plants. The general problem of nitrogen relations in plants has received attention by Ranker and also by Thomas.

CYTOLOGY

Research. — Cytological researches have claimed the attention of several workers, but the majority of published contributions have been along much the same special lines as of the past few years. This is exemplified by the following: Wolfson, "The chromosomes of *Sphaerocarpos texensis*"; Ruttle, "Chromosome number and morphology in *Nicotiana*";

Fisk, "The chromosomes of *Zea Mays*"; Gaiser, "Chromosome numbers and species characters in *Anthurium*"; Roscoe, "Cytological studies in the genus *Typha*," and "Meiotic irregularities in a gigas form of *Potentilla Anserina*"; Ruttel and Fraser, "A cytological study of *Puccinia coronata*"; Sorokin, "A study of meiosis in *Ranunculus acris*" and "Variation in homœotypic division in *Ranunculus acris*"; Melburn and Thompson, "The cytology of a tetraploid wheat hybrid (*Triticum epelutum* x *T. monococcum*)."² A cytological paper of general interest, however, is that of E. O. Earl on "The nature of chromosomes" in which "a theory is proposed to account for chromonemata as indicating the presence of a thread of ultramicroscopic genes whose split halves mutually repel each other within the chromosome."

GENETICS

In this field there has been great activity and pronounced progress. Researches in genetics, however, have overlapped to some extent the field of cytology, as for example in Chipman and Goodspeed's paper on "Inheritance in *Nicotiana tabacum* VIII. Cytological features of *purpurea* haploid." Blakeslee and associates have tested certain heterothallic species of molds for intraspecific sexual reactions; their results are published under the title "Sexual dimorphism in *Mucorales*." Buchholz and Blakeslee have continued their investigations on *Datura*, some of the results of which are presented under the title "Abnormalities in pollen-tube growth in *Datura* due to the gene 'tricarpe'." A somewhat related paper is "Chromosome and gene mutations in *Datura* following exposure to radium rays" by Gager and Blakeslee. Further illustrating the range of topics investigated may be mentioned the following: Schaffner, "Control of sex reversal in the tassel of Indian Corn"; Shull, "Crossing over in the third linkage group in *Oenothera*"; and Neff and White, "Inheritance studies in *Pisum* VI" which concerns particularly multiple allelomorphism and the inheritance of green and yellow foliage and pod color.

ECOLOGY

Books and Monographs.—Text-books and general monographic treatises in the field of ecology are none too numerous. A new text is *Plant Ecology* by W. B. McDougal; it is designed particularly for beginning classes. Of especial interest is Gleason and Cook's *Plant Ecology of Porto Rico*. This work constitutes an integral part of the Science Survey of Porto Rico and the Virgin Islands, and represents a monographic study of the ecology of the region concerned. Numerous shorter contributions of a more limited scope have appeared during the year of which the following may be mentioned as typically representative of a long series: Johnson, "Revegetation of a denuded tropical valley"; Shope, "Stem and leaf structure of aspen at different altitudes in Colorado"; Shreve, "The vegetation of a coastal mountain range" which concerns the Santa Lucia Mountains of California; Taylor, "Some ecological habitats in the long-leaf pine flats of Louisiana"; and Weaver, "Some ecological aspects of agriculture in the prairies."

TAXONOMY

Explorations.—Botanical exploration during the year 1927, has been conducted in various parts of America, notably in northern South America, under the joint auspices of some of the larger scientific institutions. The New York Botanical Garden has continued its Scientific Survey of Porto Rico and the Virgin Islands. The United States National Museum, especially through Paul C. Standley, has been active in Central America. The Canal Zone has become an important center for the study of tropical vegetation and has served as the base of operations for several investigators during the past year. Mrs. Ynez Mexia has spent the greater part of the year collecting in Mexico. Brother Marie-Victorian has continued his critical survey of the Province of Quebec, Canada, and Dr. J. K. Small has made further botanical explorations in Florida and other Gulf States. Similar explorations and field studies have been pur-

sued in various parts of the United States.

Publications.—Publications in the field of taxonomy have been numerous and varied; these fall naturally into several categories, such as general and local floras, manuals, monographs, revisions, check lists, and finally miscellaneous papers often containing important matters new to science. *The North American Flora*, a project of the New York Botanical Gardens, of some years standing, has been added to during the year. A new book of very general interest is the *Manual of Trees and Shrubs Hardy in North America* by Rehder. This work meets admirably a long felt need in this country for an authoritative and convenient volume for the identification of the many cultivated trees and shrubs. Long-year's *Trees and Shrubs of the Rocky Mountain Region* and Standley's *Plants of Glacier National Park*, written in popular style and copiously illustrated, will be found useful to the layman.

Mushrooms and Toadstools is an account of the more common edible and poisonous fungi of Canada by Güssow and Odell and is an authoritative and well illustrated book which will serve doubtless a useful purpose. One of the new and most stimulating local floras which has appeared in recent years is Pepoon's *Flora of the Chicago Region*. An important local flora also is that of Brother Louis Arsène, namely, *Flora of St. Pierre and Miquelon*. Garrett's well known *Spring Flora of the Wasatch Region* has appeared in a fourth and revised edition. Ferris has published a *Preliminary Report on the flora of the Tres Marias Islands*. Standley's *Flora of Barro Colorado Island, Panama* is unique in treating of one of the few local floras of a limited tropical area.

A type of work which is exceedingly important for taxonomy in America is that of critical revision and monographic study. It is a satisfaction to state that this type of work is increasing. Among those which have appeared during 1927 the following may be mentioned: Kanouse, *A Monographic Study of Special*

Groups of Water Moulds; Overholts, *A Monograph of the Genus Pholiota in the United States*; Coulter, *Revision of the genus Myrrhidendron*; Johnston, *Studies in the Boraginaceæ VI. A revision of the South American Boraginoideæ*; Payson, *A monograph of the Section Oreocarya of Cryptantha*; Keck, *A revision of the Genus Orthocarpus*; Leonard, *The North American Species of Scutellaria*; Hitchcock, *The Grasses of Ecuador, Peru and Bolivia*; Larsen, *A Revision of the Genus Townsendia*; and Rydberg, *Studies in the Fabiaceæ*. The check list type of list is well exemplified among this year's publications by Sudworth's *Check List of the Trees and Shrubs of the United States, Their Names and Ranges*.

GENERAL PUBLICATIONS

Numerous papers of great import in the advancement of our knowledge of the American flora have appeared during the year. Here should be mentioned the following: Gardner, "New Rhodophyceæ from the Pacific Coast of North America" and "New species of Gelidium on the Pacific Coast of North America"; Trelease, "Additions to the genus Phoradendron," wherein are published new species from Mexico, Central and South America; Leonard, "Fourteen new species of plants from Hispaniola"; Killip, "New passion flowers from South America and Mexico"; Standley, "New plants from Central America," and "New trees in Panama"; Munz, "The southern California species of *Salvia*"; Rusby, "Additions to the genus *Minnozia*"; and Gleason, "Studies on the flora of northern South America."

A very few special publications have appeared during the year. *Plants of the Past* by Knowlton is a readable and instructive book. Such glimpses of the past often help in the interpretation of relationships and distribution of plants of the present. An excellent all round monographic work and a valuable book of reference is *Cotton. History, Species, Varieties, Morphology, Breeding, Culture, Diseases and Uses* by H. B. Brown. Finally a very important ref-

erence work should be mentioned, namely, the second volume of Weis- el's *A Bibliography of American Natural History*.

ECONOMIC BOTANY

By H. K. HAYES

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INTERNATIONAL GENETICS CONGRESS

One section of the genetics congress held in Berlin, September 11 to 17, dealt with economic plants (*Zeit ind. Abs. und Vererb.*, vol. 46). Several papers were of much value to economic botany. Baur urged the importance of a copyright or patent for new plant productions and suggested an international commission to deal with the question. Several papers featured the inheritance of size characters. Lindstrom reported linkage in the tomato between size factors and factors for fruit shape also between size factors and color factors. Evidence that 3 chromosome pairs were concerned with size factors was presented. Salaman presented studies of the inheritance of cropping in the potato. He believes definite genetic factors are responsible for high cropping and that the domestic potato evolved from the wild by the loss of unfavorable factors which inhibited high cropping in the wild. Zaitzev presented data from cytological, histological, physiological, morphological, and genetic investigations of the genus *Gossypium*, Linn.

Two groups of cottons were recognized—A, new world cottons with a diploid chromosome number 62; B, old world cottons, diploid number of chromosomes =26; crosses of different types could be made within each group although some sterility was obtained in certain crosses. Complete parallelism of characters both quantitative and qualitative was observed in the two groups. This furnishes a good illustration of the Law of Homologous series. Duckart reported studies of inbreeding with rye. From 2000 plants selfed the first year, 457 were sterile, 41 were wholly fertile and the remaining were partially fertile. Some lines remained

normally vigorous upon repeated selfings although nearly all lines showed reduction in vigor.

PLANT BREEDING

Cross Pollinated Plants.—The new method of breeding cross pollinated plants by controlled self fertilization and the selection in selfed lines has been adopted very generally in the United States and in several European countries. No inbred lines of maize have been obtained which are as vigorous as the normal varieties but vigorous selfed lines have been reported in some crops—notably sugar beets, sunflowers, rye, and timothy (see Clarke, *Scientific Agr.*, vol. 7; Kirk, *idem.*, vol. 8). Richey (*Amer. Nat.*, vol. 59) has outlined a method for the production of more vigorous selfed lines of maize by convergent improvement. This method involves (1) crossing two selfed lines, (2) back pollinating to one line through each of several generations to recover the characters of that parent, (3) at the same time practicing selection to retain favorable characters of the other parent and finally the selection within the selfed lines to fix the favorable characters. The back crosses and selections may be formed in parallel with each of the original lines. By repeating the operation further improvement may be achieved.

Aside from its immediate practical value the method offers a critical experiment for the purpose of differentiating between the old hypothesis of physiological stimulation due to unlike germ plasma within the cells as a means of accounting for hybrid vigor and the more recent Mendelian explanation of dominant favorable growth factors.

Small Grain Breeding.—An interesting symposium on small grain

breeding has been published (*Jour. Amer. Soc. Agron.*, vol. 19). The statement is made that 22.6% of the total wheat acreage of the United States is seeded to varieties that have been produced by artificial hybridization. Smooth-awned varieties of barley introduced by the Minnesota station have done away with much of the unpleasant features of harvesting that crop. One of the new varieties, Velvet, has been tried in nearby states and has been received with enthusiasm by barley growers.

Fruit Varieties.—Darrow (*Jour. Heredity*, vol. 18) has presented an excellent summary of the work of the State Agricultural Experiment Stations and of the U. S. Department of Agriculture in the production and introduction of new fruit varieties. New varieties of blueberry bred by Coville of the U. S. Department of Agriculture are of much interest. Several of these produce fruits three-fourths of an inch in diameter. These studies are the foundation of the present commercial blueberry industry in New Jersey. In Iowa a blight resistant pear of high productivity has been introduced and named Patten. In South Dakota and Minnesota new plum varieties have proved of great commercial importance while the Latham raspberry produced at the Minnesota fruit breeding farm has been grown widely in nearby states and also in eastern United States. These and other instances prove the great value of fruit breeding. Most of the new varieties mentioned have been produced from hybrids. Shamel and others (*Jour. Heredity*, vol. 18) have recorded new instances of bud mutation in the Washington Navel orange and have presented data to show that these mutations propagated from limb variations are capable of perpetuation through bud propagation.

DISEASE RESISTANCE

The production of desirable disease resistant varieties of crops appears in many cases to be the most promising means of control available. Ravages of stem and leaf rust of wheat and other small grains were especially severe in the Northern Great Plains

area during 1927. Newly produced varieties by the North Dakota and Minnesota Stations, in cooperation with the United States Department of Agriculture, continued to give good yields under rust epidemic conditions. Ceres, a North Dakota variety, which has been introduced to farmers, and Marquillo, which is being increased for distribution in Minnesota, yielded much more than Marquis, a susceptible variety which is widely grown and which has been for many years the standard spring grown bread wheat.

There are many forms of stem rust, *Puccinia graminis tritici*, and these can be differentiated only by their reaction on particular wheat varieties. Cragie (lecture by A. H. R. Buller, Minnesota, 1927) has recently demonstrated that sexual combination occurs on the barberry between + and - strains. Technic has been developed by means of which hybrids between physiologic races may be made at will and studied. The methods furnish a logical mode of attack in studying the origin of physiologic forms of stem rust. If forms are produced by hybridization and if such can occur only on the barberry, this gives an added reason for the eradication of this bush. The resistant forms of wheat may lose their resistance in the presence of a newly produced, physiologic form. As some stem rust spores blow up from the south, it appears that the complete and final solution of the stem rust problem will necessitate the production and use of resistant varieties together with the eradication of the barberry.

Ridid, a bunt resistant variety of wheat, was produced by Gaines (*Jour. Agri. Res.*, vol. 23) from a cross of Turkey and Florence. In a recent lecture by Gaines at Minnesota, he stated that between 5 and 6 million bushels of the new variety were grown in the State of Washington and nearby states in 1927. A new physiologic form of bunt was discovered (letter from Gaines July 13, 1927) which severely attacked several varieties which were formerly highly resistant or even immune. Ridid proved highly resistant to the new

form. Knowledge of the mode of inheritance of reaction to particular pathogens furnishes a logical mode of attack on the problem of producing disease resistant varieties. Studies of correlation between disease reaction and genetic factors in known genetic linkage groups is a means of studying the complexity of inheritance of reaction to disease producing organisms. By using this method, Immer (Ph. D. thesis, Univ. of Minnesota, 1927) was able to demonstrate linkages between reaction to smut, *Ustilago Zeae* in maize and factors in two of the well established chromosome groups.

Chromosome Studies of Crop Plants.—Studies of chromosome numbers and relationships are furnishing new information which combined with genetic knowledge is aiding in solving problems regarding the origin of crop plants. Some wild species of the potato are reported by Smith (*Genetics*, vol. 12) to have 12, 24, or 36 chromosomes haploid. Thus the haploid chromosome number is some multiple of 12, as has been reported for other species of *Solanaceae*. The McIntyre and McCormick cultivated varieties, which produce a high percentage of fertile pollen, have a haploid number of 24 and do not have unpaired chromosomes. Tetraploidy has occurred in the Early Ohio variety as shown by cells with approximately 48 chromosomes haploid. These facts indicate that tetraploidy may have been a factor in the development of cultivated varieties.

OTHER ACTIVITIES

Studies in South Dakota by Evans (*Amer. Jour. Bot.*, vol. 14) indicate that delayed dormancy in "Early Ohio" potatoes is a cause of uneven stands of plants in the field. Treatment with ethylene chlorohydrin

hastens germination and growth. The advantages thus obtained are maintained by the vines throughout the growing season. Graber (*Jour. Amer. Soc. Agron.*, vol. 19) has made the suggestion that sweet clover (*Melilotus alba*) may improve bluegrass pastures when seed of sweet clover is sown on top of frozen ground the latter part of the winter (in March or early April). The crop must not be heavily pastured the following summer and more study is needed before recommending the practice. A paper by Nelson (*Jour. Genetics*, vol. 18) on fertility in the genus *Brassica* gives results regarding the possibility of obtaining seed from controlled selfings. Cabbage, savoy, borecole, and Brussels sprouts were totally sterile while kohlrabi turnip, swede, and rape proved partially or wholly self fertile.

White (*Zeit. ind. Abs und Vererb.*, vol. 46) as a result of 25 years of research states that genetic variation in plants shows that mutation in respect to innumerable types of structures and function does occur and that such mutation modifies the range of plant species in relation to temperature. Brink (*Sci. Agr.* 8, 1927) has reviewed much of the literature of mutations in particular reference to the causes of off types or rogues in the canning pea. In some cases mutations appear very frequent and the cost of annually roguing the crop is very great. Weaver and Brunner in *Root development of vegetable crops* (McGraw Hill, 1927) have given direct measurements of the root systems of forty or more vegetable plants. This furnishes a companion text to Weaver's *Root Development of field crops*. The knowledge given in these texts is of much value both to the scientific investigator and the practical crop producer.

ENTOMOLOGY

BY E. PORTER FELT

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PERSONAL ELEMENT

Societies.—The thirty-ninth annual meeting of the American Association of Economic Entomologists was held at Philadelphia, December 28, 1926, to January 1, 1927, with about three hundred in attendance. Prof. R. W. Harned of Louisiana was elected President and C. W. Collins of Massachusetts, Secretary-Treasurer. The Entomological Society of America held its twenty-first annual meeting at Philadelphia, December 28–29, 1926. Dr. F. E. Lutz of the American Museum of Natural History was elected President. Prof. Geo. H. F. Nuttall of England gave the annual address. The meeting of the Cotton States Entomologists was held at Atlanta, Ga., Feb. 2–4.

The Pacific Slope Branch of the American Association of Economic Entomologists held its twelfth annual meeting at Reno, Nev., June 22–23. The Third Rocky Mountain Conference of Entomologists was held at Pingree Park, Colo., August 15–20. The Northeastern Entomologists held a meeting, Aug. 18–19, taking the form of a field trip through orchards of southeastern Pennsylvania, western Maryland and eastern and western West Virginia and western Virginia. The next meeting of this organization will be held in the Hudson River Valley. The Entomological Society of Ontario held its annual meeting at Ottawa, Canada, Nov. 17–18.

The Fifth International Congress on Entomology is to be held at Ithaca, New York, in August, 1928. Both general and special sessions are planned and arrangements are being completed for a representative attendance from European countries as well as from America.

Personnel.—The retirement of Dr. L. O. Howard as Chief of the U. S. Bureau of Entomology, for fifty years in government service and thirty-three years in charge of the bureau, is noteworthy. He was succeeded as chief by Dr. C. L. Marlatt, best known

as Chairman of the Federal Horticultural Board and with a record of thirty-nine years of service in the department. The retirement is also noted of C. P. Lounsbury, Chief Entomologist of South Africa, an American by birth and training, and with thirty-two years of service to his credit. In the early days he was the only official entomologist in South Africa. Now there are twenty-five entomologists in the Union of South Africa, five in southern Rhodesia and one in Portuguese East Africa.

INSECT QUARANTINE

Revisions and Changes.—Various revisions and changes have been made in this field. The European corn borer quarantine has been amended in relation to shelled corn and extended to include infested portions of Connecticut and New Jersey. The gipsy and brown-tailed moth quarantine was revised July 1, and thirteen towns in Vermont and two towns in Connecticut were released from its provisions. The Japanese beetle quarantine was recast early in the year, and its provisions applied to the city of New York. Later it was modified to include farm products and cut flowers grown in infested areas and moved interstate by boat. Its provisions have also been broadened to include the Asiatic beetle, another recently established pest. Later it was extended to include newly discovered infested areas in Pennsylvania, New York and Connecticut.

The narcissus bulb quarantine has been revised in relation to interstate movement. The nursery stock plant and seed quarantine was revised effective April 1. The permit requirements for entry of walnuts and filberts have been discontinued. The Mexican fruit worm quarantine was laid on Texas and includes a unique feature, since there is provision for eradication measures, the elimination for five or six months of all host fruit, an attempt to actually starve

out the insect. The satin moth quarantine was extended to additional areas in Maine, New Hampshire and Massachusetts. The Thurberia weevil quarantine was extended by including under its provision all of one and part of another county.

Satin Moth.—This insect has continued to extend its range. It is an important enemy of shade and ornamental trees, and may become a serious commercial pest should it attack woodland poplars, especially in sections where pulp wood is an important product. Therefore, quarantine restrictions have been extended to include recent infestation.

Japanese Beetle.—The spread of this insect has been less than in 1926. Material progress has been made in the development of measures for the destruction of booth beetles and grubs. The experience of the last few seasons has demonstrated the possibility of controlling this pest with poison sprays, and has shown that modified spraying schedules will prevent serious injury in orchards. From the opposite approach, the introduction and establishment of beneficial parasites continues. An important development has been the expansion of the Farm Products Quarantine to the markets of New York City.

Mexican Bean Beetle.—This insect now infests the entire east, central and middle Atlantic region, excepting the coastal plain. It occurs in southeastern Michigan and southern Ontario, Canada, and has become established in several counties in southwestern New York, with little spread westerly and southerly. There has been a marked increase of infestation in eastern North Carolina.

European Corn Borer.—The outstanding development of the year has been the appropriation by the general government of \$10,000,000 for the clean-up, in cooperation with the infested states, of some 2,500,000 acres of corn land in New York, Pennsylvania, Ohio, Indiana and Michigan. This huge sum was appropriated largely because of representations formulated and presented by the International Corn Borer Committee, an organization representing the impor-

tant agricultural interests of the country. Approximately one half of this large sum (\$4,200,000) was used in compensating farmers at the nominal rate of \$2.00 per acre for the additional labor necessitated by governmental regulations. In round numbers \$3,000,000 was expended for equipment, \$1,250,000 was allotted for general expenses and \$1,300,000 was reserved for fall and spring work in 1927-1928.

It is estimated that this expenditure reduced the rate of increase which from 1926 to 1925 was 400 per cent to 50 per cent from 1926 to 1927, to one and one-half times as many in 1927 as in 1926, or a reduction of one-sixth of the presumable normal increase. The European corn borer is firmly established in the territory bordering Lakes Erie and Ontario, and is surely making its way to the corn belt. The year's scouting has uncovered infestations in 461 new townships in the above-named states, Ohio leading with 237. The range of this insect has been considerably extended in northern Ontario and southern Quebec, Canada. Extended and comprehensive investigations and the introduction and establishment of parasites are considered the most promising methods for the promotion of better control.

Oriental Fruit Moth.—This insect has been very destructive throughout most of the infested territory. Very heavy parasitism of the second brood has been reported from Connecticut.

Cotton Boll Weevil.—An unusually large proportion of the insects wintered successfully but serious injury has been reported from eastern Texas. The weevils were more numerous than usual by August in the western portion of Arkansas. They were abundant in Alabama, Georgia and South Carolina.

Forest Insects.—There has been a great extension with corresponding injury of a spruce bud worm infestation in the Thor Lake district, Ontario, Canada. The hemlock looper appeared in large numbers in northern New York, and also in several sections of Ontario, Canada, especially along the St. Lawrence River. The birch leaf miner, a recently intro-

duced saw-fly, which has spread within a few years over much of New England and eastern New York has been reported as seriously attacking birch in sections of Nova Scotia.

AGRICULTURE

The outstanding event in this field has been the artificial insemination of queen bees by Dr. L. R. Watson working under the direction of Cornell University. This eagerly sought desideration of the bee-keeper was possible only by the development of a very refined technique.

Considerable work has been done on the biometrics of the bee especially in Russia, indicating that the length of the tongue varies with the latitude. The work is being continued in America. The feeding of various carbohydrates to bees is limited to simple sugars and to a few disaccharides; starch and dextrines have not been made available, presumably for lack of the necessary enzymes. It is suggested in a recent paper that *Bacillus pluton*, the supposed cause of European foulbrood, is simply a morphological stage of *B. alvei*, which in its rod form is nonpathogenic. If true, this is a striking condition. *Streptococcus apis*, also found in the same disease, is believed to be involved in the complex life history of beekind.

INSECTICIDES

The quest for insecticides or more efficient combinations of known insecticides continues. Various fluosilicates have shown excellent results with a variety of insects, one apparently giving a considerable degree of control in the case of the sugar cane moth borer, though recent advices indicate that the percentage killed is too low for a high degree of efficiency. It has been shown that tetramethylammonium chloride and sulfate, 0.35% concentrations and pyridine benzlpyridine in 0.1% controls *Aphis rumicis*; arsenate of lead 1,500 lbs. per acre kills beetle grubs in soil, such as those of the Japanese beetle, without material injury to the plants; calcium arsenate of high grade may be used as a carrier of nicotine sulfate.

COLLECTIONS AND TEXTS

Collections.—The United States National Museum has received by bequest the Charles Fuller Baker collection of insects comprising some 400,000 specimens, and undoubtedly the largest existing private collection covering the extreme western Pacific region, and including several thousand types and co-types. It is one of the most important collections, basic to either central or southern Pacific work or for students of the southwestern Asian fauna. Mr. George M. Greene, Harrisburg, Pa., donated his entire collection of beetles, Coleoptera, some 42,000 specimens, to the U. S. National Museum.

General Texts.—The publication of a general catalogue, *Hemiptera of the World*, has begun with Fascicle 1, Membracidae, W. D. Funkhouser. It is the first number of a greatly needed world catalogue. *Guide to the Insects of Connecticut: Part V, Odonata*, by Philip Garman, is a comprehensive, well-written account of the dragon flies or Odonata of Connecticut. *The Insects of Australia and New Zealand*, by R. J. Tillyard, is an excellent comparative study of the strange insect fauna of the two principal land bodies of that little known section of the world. *The Butterflies of California*, by John A. Comstock, a popular guide illustrated with sixty-three excellent colored plates, is a valuable contribution to our knowledge of Pacific Coast insects. *The Insect Fauna of the Mount Desert (Maine) Region*, by Dr. C. W. Johnson (*Biological Survey of the Mount Desert Region*, part 1), lists 3,384 species. (There are probably over 5,000 in the section.) It is an admirable intensive study and an excellent complement to other insect lists of the northeastern United States.

NECROLOGY

Wm. Lockhead, Professor of Entomology and Zoology, McGill University, died March 26. Chas. Fuller Baker, Agricultural Director and Dean of the College of Agriculture in the Philippines, died July 22. George Charles Champion, Secretary, Biologia Central-Americana, died August 8 at Woking, England.

COGNATE SOCIETIES

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| <p>AMERICAN ANTHROPOLOGICAL ASSOCIATION.</p> <p>AMERICAN ANTHROPOLOGICAL SOCIETY.—45 W. 45th St., New York, N. Y.</p> <p>AMERICAN ASSOCIATION OF ECONOMIC ENTOMOLOGISTS.</p> <p>AMERICAN ASSOCIATION OF MUSEUMS.—2 W. 46th St., New York, N. Y.</p> <p>AMERICAN ENTOMOLOGICAL SOCIETY.—1900 Race Street, Philadelphia, Pa.</p> <p>AMERICAN NATURE ASSOCIATION.—Lakewood, N. J.</p> <p>AMERICAN NATURE STUDY SOCIETY.—542 Arden Place, Toledo, O.</p> <p>AMERICAN ORNITHOLOGISTS' UNION.—1939 Biltmore St., N. W., Washington, D. C.</p> <p>AMERICAN SOCIETY OF NATURALISTS.—University of Pennsylvania, Philadelphia, Pa.</p> | <p>AMERICAN SOCIETY OF ZOOLOGISTS.—University of Minnesota, Minneapolis, Minn.</p> <p>BOTANICAL SOCIETY OF AMERICA.—Cornell University, Ithaca, N. Y.</p> <p>NATIONAL ASSOCIATION OF AUDUBON SOCIETIES.—1974 Broadway, New York, N. Y.</p> <p>NEW YORK MICROSCOPICAL SOCIETY.—American Museum of Natural History, New York, N. Y.</p> <p>NEW YORK ZOOLOGICAL SOCIETY.—101 Park Ave., New York, N. Y.</p> <p>PALEONTOLOGICAL SOCIETY OF AMERICA.—American Museum of Natural History, New York, N. Y.</p> <p>REPTILE STUDY SOCIETY OF AMERICA, INC.—108 Convent Ave., New York, N. Y.</p> <p>ZOOLOGICAL SOCIETY.—101 Park Avenue, New York, N. Y.</p> |
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DIVISION XXIII MEDICAL SCIENCES

PHYSIOLOGY

BY PERCY G. STILES

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GENERAL

Research Scope.—In the early days of science picturesque observations were often made and recorded upon definite dates. The place and time of making various discoveries could be confidently set down. But at present this is rarely possible. Progress is gradual: the chief researches which go on have not been started within the year nor can they ever be said to be concluded. Each step in experimentation suggests another. Hence the reviewer cannot, as a rule, indicate isolated achievements but has to survey the advance of great cooperative enterprises which are seldom sensational in their outcome. For the most part physiologists are engaged in the work of testing—to verify or modify—the claims of their predecessors. Much of the current investigation is quantitative. Under its influence we often change our emphasis on certain factors in the life processes but the accumulated body of data is too large and too stable to be much altered in the compass of one year.

THE HEART

Muscular Activity.—There has been a long controversy as to how the heart meets the demands made upon it during muscular activity. When much oxygen is needed by the tissues the volume of blood supplied to them is largely increased. The delivery of the heart is doubled, trebled, or even quadrupled. These are unquestioned facts but there has been doubt as to whether the rate of the heart or the volume discharged at a single

beat should be regarded as more influential. In some quarters the human heart has been regarded as a pump expelling a nearly constant quantity of blood at each contraction. If this is typical there must be a simple ratio between the rate of the pulse and the amount of blood circulating in a minute. But if the output for a single beat can vary widely another factor has to be reckoned with.

Stroke-Volume.—A recent pronouncement concerning this matter may be summarized as follows: In the case of an untrained man the heart usually throws out very nearly the same quantity of blood at a beat whether the rate is fast or slow. The volume ejected is not far from 100 ccm. The athlete has a twofold advantage over the other. His "stroke-volume" during rest is large—it may be 150 ccm.—and his trained heart has acquired the power to increase this when desirable, perhaps by 40 or 50 per cent. The large stroke-volume maintained at rest makes it possible for the athlete to have a remarkably slow heart. When he begins to take exercise he has, naturally, a wider margin of acceleration at his disposal. Extreme quickening of the heart may not indicate a maximum volume per minute; it often occurs in non-athletes when it is of no advantage but quite the reverse. The very fast heart is not filled to capacity between contractions and is working to its own hurt without a corresponding service to the body as a whole.

Circulation.—One undeniable fact is often overlooked: the heart can pump out only so much blood as it receives. Interesting studies have shown that the return of blood to the chest is greatly affected by posture and muscular movements. The influence of gravity is always exerted to hinder the ascent of blood from the lower levels. The tendency toward an accumulation below the diaphragm is fairly offset most of the time by the massage or "milking" of the veins due to shifting pressure brought to bear upon them from without. The more perfectly muscular movement is avoided the more marked is the diminution of the venous return. With the falling off of the supply to the heart the delivery must be reduced in the same measure, the arterial pressure will sink, and with an inadequate maintenance of the circulation in the brain faintness is to be anticipated. If one lies down or falls the return of blood to the heart is immediately increased and the organ is able to insure the brain its normal allowance again.

MUSCLE CONTRACTION

Chemical Reactions.—The studies of the past twenty years have developed a detailed knowledge of the chemical changes and the evolution of energy associated with muscular activity. But there has remained a serious gap in our accounts of the process: just how the chemical reactions lead to the shortening of the fibers has not been clear. Transient acidity has been recognized as the immediate cause of contraction but how shall we conceive it to produce the result? Two theories have been in favor in some quarters; both have been declared by the best authorities to be untenable. These have been, respectively, inhibition theories and theories of surface tension. According to the first, shortening is due to a redistribution of water in the muscle protoplasm; in the second, it is attributed to the sudden reinforcement of tension occurring at longitudinal interfaces which exist in the living mechanism.

A New Theory.—The objections to these explanations have been of a

mathematical character. Now we have a new theory which must, in its turn, run the gauntlet of criticism. It is deduced from x-ray studies of relaxed and contracted muscle. The intimate change which takes place when acidity is established in the fibers is assumed to be of the nature of crystallization. Calculation of the forces which would be expected to manifest themselves in connection with such a process indicates that this conception may be strongly defended. An artificial system containing an organic salt has been prepared and shown to form crystals under the "stimulus" of acidity. Since there is contraction as an accompaniment of crystallization in this instance the model is highly suggestive. The crystals are assumed to resolve themselves at once with the disappearance of the acid.

NERVES

Chemical Processes.—Here is a field in which rapid progress has recently been made. This only became possible with the devising of most delicate apparatus. The foremost characteristic of nerve—when, for example, it is compared with muscle—is the extreme economy of its metabolism. About ten years ago it was fairly established that carbon dioxide is set free from active nerve-trunks. More recently still the minute evolution of heat attending the transmission of nerve-impulses was measured. Within the year exact data regarding the oxygen consumption of nerve have been obtained. The technique has been so refined that it is now possible to ascertain the ratio between the oxygen absorbed and the carbon dioxide released by this tissue. The ratio indicates that nerve, when functioning, burns sugar or some closely related compound just as muscle is found to do. But the scale of the respiration in the two is vastly different. Weight for weight working muscle expends several thousand times as much substance as does active nerve. This agrees with the experimental fact that it is difficult to induce definite fatigue in nerve-fibers. There is no doubt that the life processes of the central gray matter are

far more intense and that fatigue in this tissue is correspondingly easy to demonstrate.

Deprivation of Sleep.—Many years ago trials were made to discover the nature of the injuries produced in the animal system by the prevention of sleep. These old accounts have been much quoted but have been recognized to be inexact and the subject has obviously called for review. New researches of a carefully controlled character have just been reported. The animals subjected to experiment were rabbits. They were placed in metal cylinders which were very slowly turned. As a result no severe muscular activity was demanded, but each rabbit had to take an occasional step to adjust itself to the shifting support. Though food was freely consumed the animals showed definite signs of deterioration from the first and death came in from seven to thirty-one days. This is a suprisingly wide variation. Loss of weight was progressive. The general picture was of heightened metabolism until the final collapse was near.

Tissue Change.—The most interesting signs of tissue change were found by microscopic study of the nerve-cells. Earlier impressions in regard to the damage suffered by these elements received full confirmation. The degenerative alteration known as chromatolysis was clearly in evidence and the formation of vacuoles in the protoplasm appeared significant. It seems probable that there may be renewed emphasis upon structural changes in the central nervous system, a subject of which much was made a generation ago but which has lately been regarded with some skepticism.

ANEMIA

It will probably be agreed that the discovery of the value of liver derivatives in the treatment of severe anemias is the most important contribution made to scientific medicine since the preparation of insulin for the control of diabetes. Recently a great deal of ingenuity has been exercised in the endeavor to concentrate the remedial substances. Sufferers from anemia have been so con-

stantly crammed with liver that they have developed a strong antipathy to this food. Good progress has been made in the direction of obtaining the essential principle of the cells in a small volume. It is of interest to note that the correction of anemia by liver extracts does not appear to depend on iron compounds. The actual cause of the cell destruction in pernicious anemia remains uncertain. The curious observation has been made that the blood serum of anemia patients may be remarkably poisonous to a plant used as a test object. The possibility of learning something about the nature of animal fluids by the reactions of plants is novel and full of promise.

VISCOSITY OF MUSCLE

This is a property which figures far more in Physiology than has previously been the case. It may conveniently be regarded as the resistance of the interior of a muscle to change of form. We know that such a body as a wax candle, when slightly softened, can be bent gradually by the application of a slight force while it refuses to yield to sudden and brief forces many times as strong. When a muscle shortens slowly only a negligible fraction of its energy is used to overcome its internal reluctance to assume a new shape and almost all its power is available for external employment but, when the shortening is as rapid as it can be, the whole force may be spent in securing the change of form leaving no margin for useful performance. Viscosity thus sets a limit to the speed at which parts of the body can be moved. This is not simply a handicap, it is a safety mechanism. Calculation has shown that if the legs could be swung much faster than is in fact possible the momentum would dislocate the joints or work other harm.

Muscle viscosity appears to be a variable in animals of different sizes. It must be very low in the wing muscles of small birds. Among human subjects it is probably a variable also, though within much narrower limits. A runner may outstrip his competitor who releases an equal

amount of energy but is compelled to expend more of it in overcoming internal resistances. It is likely that some reduction of viscosity is a feature of the process of training. A similar reduction may well accompany the period of "warming up" for an athletic event.

WEIGHT AND EFFICIENCY

Experiments.—Some striking experiments having a practical bearing on the conduct of life have lately been reported. They have to do with the comparative ability of normal, overweight and underweight subjects to apply their resources to the performance of definite amounts of work. The subjects were young women and the work was done upon a stationary bicycle. Measurement of the respiratory exchange afforded a basis for judging whether in each case the accomplishment was large or small in proportion to the consumption of oxygen. The figures denote the increase of metabolism over the resting rate for three groups, the prescribed work being the same for all.

The subjects classed as normal in weight fulfilled the requirement with an increase of 226 per cent. The underweight subjects found it necessary to expend 323 per cent more of their body fuel than when at rest. The expenditure of those in the overweight class rose by 368 per cent. Since their initial datum was high this means even more of a disadvantage than might at first appear. Per contra, the underweight individuals started from a lower level than the average. There must evidently be a waste of power when a heavy body—or its heavy members—have to be moved to produce external effects. One is reminded of the obvious fact that a large steamer cannot be used economically as a tow-boat.

Why Overweight?—The perennial question is why so many persons who do not seem to eat recklessly keep putting on adipose tissue. This is often dismissed with the vague mention of a "constitutional tendency." Just what is to be understood? Laboratory tests have given some indications of metabolic peculiarities which favor obesity. It has been shown

that many overweight subjects do not speed up their oxidation processes after each meal to the degree that is considered normal. Thus they may conserve a little from day to day on a ration which another might find barely sufficient for the same program. Within a few months another point has been made. This is to the effect that heavy persons often show, following a mixed meal, what is called a "high respiratory quotient." This value (the ratio between carbon dioxide produced and oxygen absorbed) throws light on some characteristics of the metabolism.

One of the possible implications of a high quotient is that fat is being formed from carbohydrate food. It may be that the system exhibiting the proclivity to add to its own mass makes this change with particular facility. When offered the varied products of digestion it may seize upon sugar for the synthesis of fat with an avidity which would be lacking in another type of organism. When all is said the fact remains that no one can gain in weight unless the income exceeds the current need. But to check such gain involves genuine hardship in many cases.

ELECTROPHYSIOLOGY

Significance.—This is a field which constantly appears more important. Every tissue activity is signalized by electrical changes and their features are recorded by instruments of incredible delicacy. Such methods have long been recognized as capable of yielding information concerning the nervous system which cannot be obtained in any other way. Their applicability to contractile and secreting tissues is also well established. An interesting example is furnished by a recent study of the pancreas. It is known that this organ has a function to perform in connection with the metabolism of sugar. It is now found that when glucose is injected into the circulating blood of a cat the condition of the pancreas undergoes a change which is detectable by a sensitive galvanometer in circuit with the organ. The sugar has presumably stimulated the Island cells to liberate insulin and what is

noted is the electrical sign of the secretory process.

Irradiation Effects.—Here is another type of experiment which forms the basis of many investigations. It is known that the exposure of certain foods to ultra-violet rays may modify their nutritive value. Such treatment has been proved to add to the virtue of some foods as protectors against rickets. But it has been shown that

the radiation may impair as well as improve the potency of milk. In technical language, the increase of the Vitamin D (which prevents rickets) may be simultaneous with a decrease of Vitamin A (which insures normal growth and guards against an inflammatory condition of the eyes). It is clear that much remains to be learned about the effect of rays upon organic matter.

PATHOLOGY

BY A. J. MILLER

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RETICULO-ENDOTHELIAL SYSTEMS

Over a half century ago Kupffer called attention to certain cells in the liver presumed to have a special function. Others at different times added to the list of those tissues having a reticulum, or network, which was presumably associated functionally and structurally with endothelial cells, until the work was climaxed by Aschoff, who organized the structures into a reticulo-endothelial system. Since then much has been written about the functions of these cells and their network. Various diseases resulting from the pathology and even the neoplasms arising from this system have been described.

By careful study of tissues from different parts of the body, including various kinds of tumors, Mallory and Parker have done much to make the understanding of these structures possible. No continuity between the endothelial cells and the reticulum was demonstrated. There was no reticular substance demonstrated to be a product of endothelial cells. The reticulum present in tissues is sometimes found so far removed from endothelial cells, for instance, in tumors such as sarcomas and scirrhus carcinomas, that it seems quite impossible that this structure could have been formed by endothelial cells. It was also found that this reticulum after degeneration of tissue parenchyma, such as the muscle cells in

the uterus or a leiomyoma, were seen to undergo changes which transformed the reticulum into structures which had the appearance and staining reaction of collagen. It was also noted that these delicate fibrils were apparently attached to the cytoplasm of connective tissue cells. The difference in staining reaction which has been the foundation in the argument for thinking this reticulum was not of the structures produced by connective tissue cells occurs simply because the reticular tissue is present in tiny strands and not in bundles and that the staining reaction of collagen and reticular fibrils is identical if their physical structure is identical. It is pointed out that it is not necessary to recognize a new type of cell which produces this fibrillar inter-cellular substance, since this substance is identical with that produced by the fibroblast. The existence of the structures, of course, is not denied but since they are not related structurally and, so far as is known, functionally, there is no reason to combine these structures into a system.

The result of this work apparently clears up a question in histology rather than pathology, but the conclusions were arrived at by the study of pathological tissue as well as normal tissue and no doubt the relation of these structures to disease afforded the stimulus for the work.

MENINGOCOCCIC VEGETATIVE ENDOCARDITIS

For years it has been the common teaching that the meningococcus had little or no power to invade tissue. This teaching has been denied by a case report of Rhoads which is simply an addition to a group previously reported by different authors, the first appearing in 1903. The organism was identified by thorough and painstaking work so that the lesion cannot be questioned as being the result of the meningococcus. The lesion was vegetative in nature and was located on the tricuspid valve of the heart. Inflammatory reaction in the heart muscle similar to that of rheumatic fever was also found.

This case report brings to mind the fact that infectious agents are very plastic in regard to their activities and that atypical lesions in general may include a very large group of tissues. This principle may be applied to any infectious agent. The fact remains, however, that in many instances specific infectious agents produce characteristic tissue changes and that quite often the specific etiology may be named from a careful study of the inflammatory changes.

PERNICIOUS ANEMIA

The study of bone marrow obtained by marrow punctures has helped to confirm one concept of the disease process in pernicious anemia. Peabody obtained the specimens from the marrow of the tibia of living patients at different stages of the disease during life. He found that the structure of the bone marrow tends to return to normal during the remission and that during the relapse of the disease the essential lesion is a rapid and extensive proliferation of megakaryoblasts and that the differentiation or maturing of the erythrocytes is cut short. It appears that the bone marrow is functionally inefficient. It would be reasoned from this that pernicious anemia is primarily a disease of the bone marrow and that the marrow changes are not the result of hyperactivity and exhaustion only. The anemia, therefore, is the result of the lack of blood cell formation.

It is suggested that the good results obtained from feeding of liver to pernicious anemia patients is due to some stimulating substance in the liver which influences the development and differentiation of red blood cells causing more mature forms to appear. If this be the case we can hope to cure pernicious anemia by the feeding of liver.

EXPERIMENTAL RENAL INEFFICIENCY

Review of the tons of literature which have been printed in the last few years about nephritis could only make confusion more confounded. It seems quite clear that Fischer has helped to understand some of the vital processes in kidney disease. His work in toto, however, cannot be accepted. In the last year Miller and Apfelbach have no doubt succeeded in producing a satisfactory renal deficient animal. They did so by plugging the capillary tufts with an inert granular substance, namely bone charcoal. In this way portions of the kidney were destroyed without the confusing effects of toxins that are often used for this purpose. The more chronic examples are not included in the report but they will no doubt furnish information of much value and interest. The animals so far studied produced urine of low specific gravity. There was polyuria, albuminuria, and a decrease in the phenolsulphonephthalein output. There was also retention in the blood of urea, non protein nitrogen and creatinine.

It is gratifying to have our faith substantiated in regard to the above things. It is noted with interest, however, that alterations in the eye grounds did not occur and that there was no accumulation of fluid. It is possible that these things will be observed in the animals that are allowed to live longer. It is also noted with interest that no definite relation to kidney destruction and blood pressure was established. The authors attribute this failure to the lack of a proper method of studying the blood pressure. That, however, does not seem to be an insurmountable difficulty. It seems quite certain

that many of the things attributed to kidney deficiency in patients with nephritis will have to seek a different explanation.

HISTOLOGY AND PROGNOSIS OF TUMORS

In the literature of recent years there has been much discussion as to whether or not a definite relationship exists between the histo-pathology of tumors and their prognosis. There are many discussions pro and con and, as is generally the case in such conditions, there is some evidence for each view. The subject is quite well reviewed by Plaut, who feels that superficial study of sections of tumors will undoubtedly result in a mistaken impression and that in order to utilize these data at all they must be obtained only after very careful and extensive study of tumor tissue. The mistakes frequently made in attempting to make a prognosis from histological study result because of the fact that tumors differ much in structure in different parts and that the metastatic cells from a primary tumor are very often in great minority at the primary site.

We have yet to find histological evidences to give us information as to whether or not tumors will change in their degree of malignancy or whether they will change in the other direction and become more like normal tissues. A few cases in the literature of undisputed spontaneous recovery from carcinomas are evidence that tumor cells can change so as to differentiate more like normal tissues. Evidently the change occurs in each direction. The forces which bring about that change we have no conception of. In general it may be stated that the more nearly normal tissue is mimicked the less malignant tumors are, and that the greater the reaction on the part of the host, that is, the greater the connective tissue and lymphocytic infiltration, the less malignant tumors are. It must be remembered, however, that tumor tissue is not uniform in structure or in activity.

In the prognosis of neoplastic diseases it must also be remembered that such factors as age, sex, race, and environment no doubt have an important rôle to play in the progress of neoplastic diseases.

CELLULAR UNITY

An interesting study has been made by Bloom. He found by studying the property of phagocytosis of lung tissue of rabbits grown in vitro, that if the host of the tissue cultures had been previously immunized to pigeon erythrocytes, phagocytosis of these cells was very marked. If, however, the animals had not been previously immunized phagocytosis was nil or practically so. Phagocytosis could also be enhanced in the cultures of non-immunized animal tissues by the addition of immune serum to the cultures. The fact that this property is shown much more marked in cultures from immune animals indicates that this property of immunity is handed down in tissue cells to the descendants. Therefore, there must be cellular immunity. It is not possible, however, to draw the conclusion that no immune substances are present in the body fluids.

ETIOLOGY OF NEOPLASMS

The etiology of cancer, sarcoma and other tumors has not been discovered. The past year, however, seems to have crystallized our different conceptions. Something in common has appeared in all the different methods used to produce tumors. The methods used thus far consist of the use of a chemical or mechanical irritant over long periods of time. Burrows succeeded in transforming the tissues of rat embryos into tumors by the addition of a sterile extract of tumor tissue. Evidently the extract has in it a growth stimulant that is necessary for tumor growth; or it contains something that destroys the growth inhibitor. This growth stimulant is the common factor and the different methods of producing tumor consist of different ways of producing this stimulant.

MEDICINE

MEDICINE

By F. LOWELL DUNN

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SUBJECTS

The following subjects have been selected for the present year: (1) the malarial treatment of general paresis, (2) the Minot-Murphy diet in the treatment of pernicious anemia, (3) the relationship of certain focal infections to general disease in infants and young children, (4) crystalline insulin, and (5) the antirachitic properties of certain foods.

ELECTROLYTIC DISSOCIATION IN SOLUTIONS

Arrhenius Theory.—The originator of the theory of electrolytic dissociation in solutions, Svante Arrhenius, died October 3. This concept is used so universally today that we are apt to forget to whom we owe its origin. Briefly Arrhenius' theory was that salts in solution such as sodium chloride separate into charged particles known as ions. It is well to recall at this time the tremendous importance of this idea in the development of analytic methods in medicine and in the understanding of chemical equilibria in the body.

About twenty years ago Arrhenius attempted to apply his principles of solutions to the reactions between bacteriological poisons and bodily resistance. Although not very successful, the more recent work of Donnan on membrane equilibria followed up biologically by Jacques Loeb and others has shown the basic soundness of Arrhenius' attempt. The difficulties which confronted Arrhenius seem to be disappearing as we learn more about the reactions of colloidal systems. The work of Arrhenius in itself is sufficient argument for the importance of research in the so-called pure sciences as a means of promoting the welfare of man.

MALARIAL TREATMENT OF GENERAL PARESIS

Von Jauregg.—The Nobel prize for medicine this year was awarded to

Professor Julius Wagner von Jauregg of the University of Vienna. His first paper on the malarial treatment of paresis, a form of brain syphilis, was published in 1887. It had been observed that although syphilis was very common in tropical countries general paresis was rare and that paretics were often improved after having had a disease associated with a high fever. Dr. von Jauregg tried out inoculating patients with a number of diseases such as typhoid, erysipelas and intermittent fever. Malaria had certain practical advantages which led to its selection after extensive trial. As is well known malaria is characterized by a succession of chills and high fever and can be stopped by the use of quinine, one of the few specific drugs in medicine. Dr. von Jauregg's original paper was not widely recognized until he published further observations on this form of treatment in 1917.

Ferraro and Fong.—Since that time the method has been used quite generally and this year Ferraro and Fong report 3,796 cases collected from the literature since 1917, and add 120 cases of their own. A few cubic centimeters of blood taken from a case of malaria are injected into the paretic intravenously. If the inoculation is successful after about five days the characteristic chills and fever appear. These are allowed to continue until the patient has had ten to fifteen chills. The malaria is then stopped by quinine. When successful there is a steady improvement for several months following the inoculation. According to the reports about one third of the cases are sufficiently improved to go back to social and business life, and another third are definitely improved. This may seem a very unsuccessful form of treatment but it is in marked contrast to the almost uniformly progressive decline of the untreated patient. The treatment is not without

danger and statistics show a mortality approaching ten per cent.

Analysis.—The mechanism of action of this type of therapy is not clearly understood but it is generally believed that by producing a sharp febrile response in a case with a chronic infection, the organism may be stimulated to a greater resistance against the infection. It is as if the organism were lazy and didn't respond to a chronic infection but required a sharp whip to make it react. Many chronic diseases are being treated by injecting into the body small amounts of foreign protein which, given in sufficient dosage, produce a sharp rise in temperature. Some believe that the benefits derived are rather closely related to the rise in temperature. In this respect malaria is very desirable because temperatures of 104 to 106 degrees may be obtained and the use of quinine gives good control of the reaction in case the paroxysms become too severe. Typhoid vaccines, sterile milk and other protein preparations are used to a limited extent in the treatment of diseases such as multiple sclerosis, chronic arthritis, and chronic sinus infections. One of the serious drawbacks to the use of malaria is that a good method has not yet been developed for the storage and transport of plasmodia.

THE TREATMENT OF PERNICIOUS ANEMIA

Minot-Murphy Liver Diet.—A possible explanation of pernicious anemia has been suggested by the work of Drs. G. R. Minot, W. P. Murphy, and their associates in Boston, by their experiments on the effects of liver feeding. The earlier experimental work on animals of Whipple and Hooper had established the value of liver feeding in experimental anemias, due to loss of blood, and their success suggested its trial in pernicious anemia. Although the usual methods of treating the simple anemias, except for blood transfusion, have been used without success in pernicious anemia, yet the literature of the past year has been almost universal in acclaiming the benefits of liver diets. Minot and Murphy re-

ported 105 cases treated over periods of one to three years. Of these 90 were put on the diet when the red cells averaged one third the normal value. At the time of the report only three in the group were dead, one dying of a cerebral thrombosis and another in an automobile accident. When one recalls that formerly a diagnosis of pernicious anemia was tantamount to saying that death will soon occur, the results reported are remarkable.

Effects.—Within a few weeks after starting the liver diet improvement is noted. The blood changes towards a distinctly normal type and the several features characteristic of pernicious anemia tend to disappear. Along with the improvement in the blood picture, there is an increase in appetite, the sore tongue heals and digestive symptoms subside. The nervous symptoms, which have been so refractory to the treatment in vogue, become stationary and in a few cases have improved. In the few cases where the patient has not kept up the treatment the anemia has recurred.

Dietary Factors.—Aside from the work of Whipple and Hooper noted above, Minot and Murphy were led to the use of liver feeding after noting the resemblance of pernicious anemia to pellagra, sprue, beriberi and other deficiency conditions. They noted that many of the patients had been on faulty diets for years, in which red meats were especially lacking and in which there was an excess of fatty foods. The geographical distribution of the disease suggested a dietary factor.

Attempts have been made by the Harvard observers to isolate the active substance from the liver and a non-protein fraction of beef liver has been obtained and purified which has the same effect as the whole liver. A few grams of this extract per day has proved as efficacious as several hundred grams of whole liver. Full reports on these studies have not been published, but the results thus far indicate that the substance isolated does not correspond to any known vitamin.

So many methods of treatment have

been suggested for this disease since its recognition that one is instinctively cautious about accepting another one, but a leading clinician has well remarked that nothing in the past twenty-five years has given such striking improvement.

GENERAL DISEASE IN INFANTS AND YOUNG CHILDREN

Relationship of Certain Focal Infections.—The failure of certain infants and young children to gain has usually been regarded as nutritional or metabolic in origin. In reality it is now being shown that infection plays an important rôle in a number of these cases. Certain infections such as those in tonsils and adenoids, middle ear, chest, genito-urinary system, bones and skin, can usually be recognized without much difficulty, by a systematic search. But there are other locations in which the local signs and symptoms have not sufficed to permit of their recognition. Furthermore there has been the general impression that infants and young children do not have sufficient development of the paranasal sinuses to harbor chronic disease. The importance of mastoid infections in this respect was clearly expressed by Hartmann in 1898 and recently by Byfield. Some of the general symptoms are a failure to gain weight, a low intermittent fever, and occasional attacks of diarrhea. Locally there may be practically nothing to make out. Occasionally the eardrum may lack lustre or the wall of the external auditory canal may show a little sagging.

There is an anatomical reason for this lack of signs in the ear. The mastoid which is only developed as far as a single space in these infants is the antrum of the adult ear. The communication between the middle ear and the antrum is small and a minimal amount of swelling of the mucous membrane closes it. Consequently puncturing the eardrums does not always drain the pus pocket. Dr. McKim Marriott and others have recently shown the striking results obtained when proper drainage of the pus is effected. The operation is a simple one and done with a local anesthetic. A small button of bone

is removed permitting free drainage of the cavity to the outside. Dr. Marriott has pointed out that the internist or pediatrician is often in a better position to make a diagnosis than the specialist who relies solely upon local findings.

Paranasal sinus infections may be the important factor in the production of kidney disease, asthma, heart disease, arteritis, iritis, etc. It is interesting to note that it is the chronic infection which does the damage and not the acute one in which local symptoms are marked and clear up without residuals. Treatment directed toward chronic sinus infections has the virtue of an attempt to remove causative factors, although it requires much greater finesse and responsibility than the simple symptomatic treatment. Here again it must be emphasized that surgical drainage of sinuses and removal of tonsils without adequate study can only bring a useful method of attack into disrepute.

INSULIN

Abel Crystalline Process.—Some of the details in the preparation of crystalline insulin lacking in the review last year have not been published. Using the dry commercial powder or the concentrated insulin solutions Dr. J. J. Abel has been able to obtain crystalline insulin in any desired quantity. The process requires several days. Certain impurities are removed by the use of brucine in acid solution followed by pyridine. Further impurities are removed by ammonia and then the insulin is allowed to crystallize out. The degree of acidity at which the insulin crystallizes out is sharply delimited.

Tests.—In tests made by Dr. Abel the crystals have a potency of about 40 international units per milligram. A few milligrams furnish all the enzyme necessary for burning glucose for a day in the body. The insulin molecule is optically active and turns the plane of polarized light to the left. Extensive tests have been made to show that the crystals obtained are the active substance and not merely inert material which has

absorbed the enzyme. The chemical composition has been determined but not its structure. A satisfactory solvent has not been found, so the molecular weight is not known yet.

ANTIRACHITIC PROPERTIES OF FOODS

Work of Hess.—Dr. Alfred F. Hess was awarded the John Scott medal this year for his extensive work on the antirachitic properties of food-stuffs after exposure to ultra-violet light. The value of sunlight and cod liver oil in preventing rickets has long been known. Hess has shown that cod liver oil on exposure to ultra-violet radiation develops marked antirachitic properties. Further studies have shown that the substance associated with this activity was cholesterol, a complex chemical compound widely distributed in animal tissues. However, on attempting to purify the cholesterol with charcoal the antirachitic property was lost. Dr. Hess and his associates have succeeded in isolating a substance known as ergosterol which is so potent that 0.002 milligram a day will protect a rat from getting rickets when it is put on a deficient diet, and will cure a rachitic rat. The cure can be demonstrated by calcification of the epiphyses as shown by x-ray or by chemical studies. Somewhat similarly a substance phytosterol has been identified in plants which develop antirachitic properties on exposure to ultra-violet. Substances such as dried milk retain their activity for a longer time than vegetables; the former is highly potent even after six months.

One of the interesting questions to be answered is just what happens to these foodstuffs on being exposed to ultra-violet radiation. The melting point, optical rotation and chemical composition remain unchanged. Aside from the biological effect the only change so far found is that the wave length of maximum absorption of the substance shifts a few millionths of a millimeter. This shift probably means that the substance is changed in structure into a form having a higher storage of energy. Only a narrow band of wave lengths in the ultra-violet has the power of activating

these substances, and Hess has shown that too much radiation permanently destroys them. On the other hand he has shown that sunlight is relatively feeble in ultra-violet, and especially so during the winter months when rickets is more common.

Work of this type is similar in idea to that in physics on the photo-electric effect and the modern radiation theories of chemical reactions. Although Hess has shown fairly well that the antirachitic radiated substance he has worked with does not correspond to any known vitamin, the question arises as to whether we are not getting an insight into the mechanism of action of the enzymes and catalysts which occur so abundantly and play such an important rôle in the metabolism. In this instance we have a substance which in very minute amounts can store up energy, which can hold the stored up energy for long periods, and which can give it up to the organism producing very marked changes in the nutrition and health.

Necrology.—The death of Francis Weld Peabody on October 13 at the age of forty-six should not be passed by without mention. As well said, "With an ideal training, full of energy and resourcefulness, all those who were interested in medicine and its future looked upon him as one of its most able representatives, and as one upon whom would fall many of the responsibilities associated with shaping the development of medical education and practice during the next decades." In 1921 the Board of Trustees of the Boston City Hospital erected the fine Thorndyke Memorial Laboratory and placed Dr. Peabody in charge—a decided departure in the usual policies of American municipal hospitals both in equipment and in the selection of a director. His studies on respiration and the development of a practical method for determining the vital capacity of the lung furnished a new method of studying heart failure. He was a medical member of a Rockefeller Foundation commission to China and had an important part in determining the policies of the Pekin Union Medical School.

PHARMACOLOGY

BY HARRY GOLD

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Progress.—The advance made in the field of pharmacology in America in the past year is illustrative of the usual course of progress in this phase of the medical sciences. There have been no revolutionizing discoveries, no startling panacea has come to light, but on the whole events have moved steadily forward; on the one hand, in the direction of the study of new drugs that may prove to be of value in the treatment of disease; on the other hand, in the direction of a better understanding of the properties and actions of known drugs and the behavior of the organism under their influence. In this review only researches possessing some points of general interest will be referred to, hence there are omitted numerous pharmacologic publications of great technical and scientific merit.

The American Society of Pharmacology and Experimental Therapeutics met in Rochester April 14, 15, and 16, 1927. There was evidence of considerable activity in pharmacologic research throughout the country. Over thirty papers on various pharmacologic subjects were presented.

Use of Motion Pictures.—A very interesting innovation has been made in the teaching of pharmacology by the introduction of the motion picture to demonstrate the behavior of different organs. At the meeting of the Pharmacological Society in Rochester in April, Dr. Torald Sollman showed cinematographic pictures of the behavior of excised intestines under various conditions. Motion pictures were also exhibited by Alvarez and by Wiggers, the former showing intestinal activity in the living animal, and the latter the movements of the heart.

Insulin.—Abel and his collaborators have been pursuing further their studies on crystalline insulin. They have recently described a new short method for the preparation of this substance, also some of its properties and actions, and have brought

forth further evidence substantiating the identity of the substance as crystalline insulin.

A long stride in the treatment of diabetes was made with the discovery of insulin by Banting and his co-workers in 1923. The use of insulin is not without drawbacks, however, due to the necessity for frequent injections and the danger of hypoglycemic shock. Many substances obtained from the vegetable kingdom are capable of lowering the blood sugar. Of special interest is the recent report on myrtillin, a blueberry leaf extract by Dr. Frederick M. Allen. This substance can be taken by mouth and brings about the disappearance of sugar from the urine with a lowering of the blood sugar to normal in animals and man. It is still in the experimental stage but seems to have possibilities as a useful accessory in the treatment of diabetes.

Nicotine in Milk.—Very little was known about the excretion of nicotine in milk. With the increase in the habit of smoking among women it became a question of considerable importance to know if the nicotine of the smoke was eliminated in the nursing mother's milk in sufficient quantities to be harmful to the child. Experiments bearing on this question were made by Robert A. Hatcher and Hilda Crosby. These investigators found that very large doses of nicotine would suppress the secretion of milk for several hours in animals but the quantity of nicotine secreted in the milk seemed to have no influence upon the offspring. In the milk of two women who smoked large numbers of cigarettes only traces of nicotine were found.

High Blood Pressure.—The management of patients with high blood pressure has always been one of the most difficult problems in therapeutics confronting the physician. In addition to the general hygienic measures, numerous drugs have been employed

with indifferent success. The recent publications by J. B. Nichols and by L. T. Gager are of considerable interest in indicating that potassium sulphocyanate is effective in lowering the blood pressure in certain types of patients with hypertension. Another contribution to the subject has been made by Edward J. Stieglitz. The nitrites lower the blood pressure but the effects are too violent and too fleeting. Dr. Stieglitz has reported beneficial results from the use of bis-muth subnitrate from which small quantities of nitrite are liberated slowly and continuously in the intestine, thereby insuring more or less continuous and moderate lowering of the blood pressure.

Respiration Treatment.—One of the most frequent symptoms the physician is called upon to treat is depression of the respiration as it occurs for instance, in the newborn following difficult labor; in a host of infectious diseases, poisoning by drugs and in drowning. Physical means such as artificial respiration, and the use of a combination of oxygen and carbon dioxide, have proved to be the most satisfactory methods for stimulating the depressed respiratory center, while the use of drugs for that purpose has been of very little benefit and in many cases harmful. Alpha-lobelin, a drug closely related to nicotine, has been widely advertised in the commercial drug literature as an effective and harmless respiratory stimulant. The tenor of the advertising gave the physician a false sense of security, as a result of which he might fail to use other methods of established merit in the treatment of respiratory failure. The studies on alpha-lobelin by Victor H. Norris and Soma Weiss give scientific evidence of the fact that this drug is no better than other drugs employed for respiratory stimulation and point out the uncertainty of its action under various conditions and the dangers in its use.

Micro-Manipulation. — Extremely interesting observations from the scientific point of view are being made in the pharmacologic studies of the individual cell with the aid of the micro-manipulator. Herbert Pollack

of the Laboratory of Cellulor Biology of Cornell University Medical College reported at the November session of the Society for Experimental Biology and Medicine on the difference between the action of picric acid on the ameba when the cell is immersed in the acid and when the picric acid is injected into the cell. In the former case the cell promptly dies; in the later case the cell remains uninjured. Since picric acid precipitates proteins, this experiment demonstrates the vital difference between the behavior of dead proteins and the proteins of living protoplasm.

Chemical Gases.—The gases employed in chemical warfare are strongly irritant to the respiratory passages. This has given rise to the popular belief that these gases contributed to the greater incidence of pulmonary tuberculosis after the war. In June, 1927, an experimental study of this question was published by A. R. Koontz of the Chemical Warfare Service. He found that contrary to the accepted notion, the gassing of rabbits with phosgene, mustard, and lewisite, does not render them more susceptible to tuberculosis than is the normal animal, nor do these gases change the course of tuberculosis previously induced in the normal animal.

Ouabain, a pure principle of the digitalis series, valuable for intravenous administration in acute heart failure, had fallen into disrepute because of improper usage. The careful study by Wyckoff and Goldring of Bellevue Hospital showed that with proper doses excellent therapeutic results can be obtained with no greater danger than attends the use of the digitalis bodies by other methods. This work has an important influence on the effort constantly being made to promote the use of pure principles instead of complex mixtures of crude or proprietary drugs.

The Council on Pharmacy and Chemistry as in past years has gone on with its task of cleansing and reforming the field of proprietary medicines to protect the medical profession as well as the public against the numerous attempts to foist upon them nostrums and quackeries. Dr. George H. Simmons, first chairman

of the Council on Pharmacy and Chemistry, serving since it was established in 1905, has retired from active work in the Council. He was a guiding spirit in that body for a period of over twenty years and was in a large measure responsible for the high place the Council now occupies as an instrument of progress in American medicine.

Magnus.—A great loss has been sustained by the medical world in the death of Rudolph Magnus on

July 24, 1927, at the age of 51. He was professor of pharmacology at the University of Utrecht. A man with a keen intellect and boundless energy, working over a period of about thirty years, he has left behind a great monument of scientific researches covering a wide range of subjects in pharmacology and related sciences, and while done in Europe, his work has been a potent factor in shaping the course of pharmacologic thought the world over.

PROGRESS OF SURGERY

BY HERBERT H. DAVIS

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Varicosities of the Leg.—The treatment of varicosities of the leg with their various and oftentimes disabling results has been an ever-present source of worry to men of the medical profession. Many patients are made invalids for the remainder of their lives and during all that time are in constant distress and discomfort.

Oftentimes patients with large varicosities have little or no discomfort and then, again, patients with veins of the same size and location suffer a great deal of pain. The best explanation regarding the cause of the pain is the increased tension on some of the terminal nerve filaments as they penetrate to the skin. Patients often complain of rheumatic pains in the knee and ankle or through the lower leg, when in reality these are all due to the extensive varicosities present, even though they may not be obvious on first inspection.

Treatment.—The old and established treatment of varicose ulcers has been an attempt at sterilization of the ulcers locally, followed by a supporting band to the whole leg to avoid the associated stagnation. In any treatment for varicose veins, three things must be considered: first, the removal of the cause of the trouble; second, the excision or destruction of the veins which are

causing the trouble; and, third, the preservation of the deep saphenous vein which is the main channel for drainage of the lower extremity.

The importance of the ambulatory treatment in the care of varicose veins and ulcers cannot be overemphasized; it is the one great advantage of the injection treatment over the operative method. There are serious objections to operation because, (1) The varicosities may recur; (2) One in five hundred cases dies of pulmonary embolism; (3) Patients must be confined to bed; (4) Scars are unsightly; (5) Discomfort of anæsthetic, dressings, etc.

Recently varicose veins have been treated by injecting various solutions into the vein with the idea of causing enough irritation so that the vein becomes obliterated. Many different solutions have been used, such as: 20 per cent of common salt, mercuric chloride 1 per cent, glucose 50 to 60 per cent, sodium salicylate 20 to 40 per cent, mercuric chloride 1 per cent and ammonium chloride 1 per cent, calorose—which is an invert sugar preparation at present being used extensively in Vienna—alcohol, and so forth.

With the injection treatment the patient need not be confined to his home but may go right on about his work. This spares him a great expense, as far as hospital bills are

concerned, and he does not lose time from work. It is a simple matter to repeat treatment if the varicosities recur.

Gall Bladder.—Whitaker, who in the last few years at Harvard has done considerable experimental work on the gall bladder, discusses the mechanism of the emptying of that organ. He considers the theories that it is due to pressure on the gall bladder by the diaphragm and liver during inspiration, to siphonage and suction of the duodenum, or to reciprocal action between the common duct sphincter and the gall bladder. He does not favor any of these theories, but his work indicates that emptying is due to active contraction of the gall bladder, smooth muscle. There is an increase of pressure in the gall bladder following ingestion of food. The gall bladder of a cat containing iodized oil can be observed fluoroscopically to elongate when it starts to empty, this presumably resulting from the preponderance of circular muscle fibers. He finds the muscula-

ture of the gall bladder capable of exerting considerable force.

Hamrick's experiments seem to confirm Whitaker's work that contractions of the gall bladder musculature appear to be the main factor in normal emptying. The gall bladder did not tend to empty during the fasting state.

Angina Pectoris.—Cutler gives a complete summary and bibliography up-to-date of the work done on the surgical treatment of angina pectoris. From this he concludes that operations that divide the known sensory pathways in the sympathetic nervous system connecting the heart with the central nervous system give a fairly high percentage of satisfactory results. The complete Jonnesco procedure, he thinks, achieves part of its success because it interferes with a motor autonomic reflex as well as interrupts the sensory pathways. No single procedure will alleviate the pain in all cases. This cannot be explained and needs much more study.

DENTISTRY

By WILLIAM B. DUNNING

DENTAL SURGEON, NEW YORK

DENTAL ORGANIZATIONS

American Dental Association.—The past year has been one of constructive activity in the work of the leading dental organizations; the chief event being the Meeting of the American Dental Association in Detroit, October 24-28, 1927. It may be said in general that the tendency in most societies has been towards improvement in their scientific programs through an increased output of original research, clinical demonstrations by improved methods of presentation and a corresponding reduction of purely academic discussion. The growth of "study clubs" is a direct response to the demand among practitioners for instruction in advanced technic in accepted operative procedures.

DENTAL EDUCATION

Carnegie Foundation Bulletin.—A very important event was the publication in June of a bulletin of the Carnegie Foundation for the Advancement of Teaching on Dental Education in the United States and Canada (Bulletin, Nov. 19, *Dental Education in the United States and Canada*). This is a report of an investigation by Professor William J. Gies of Columbia University, based on a personal inspection of every dental school in both countries, and is the first systematic study of the kind ever attempted. The work covered a period of about six years and is printed in a volume of 692 pages of carefully sifted material.

The report is divided under seven main heads: I, General History of Dentistry; II, Present Main Features

of Dental Education in the United States; III, Prospective Improvement of Dental Education; IV, Dental Education in Canada; V, General Views and Conclusions; VI, Dental Schools in the United States and Canada; VII, Appendix containing important supplemental and tabular matter. The preface, by President Henry S. Pritchett of the Foundation, is a concise view of the entire problem under discussion and summarizes admirably the scope and purpose of the study.

Educational Evolution.—The history of the rapid and great changes in dental education during the past century is outlined, from the apprenticeship system of instruction in the offices of practitioners, through the era of commercial and proprietary colleges to the present time, when all but two of the existing 49 schools in the United States are under university control. The work of the various educational bodies in this evolution is reviewed—notably that of the Dental Faculties Association of American Universities in bringing about the transition of dental education from the proprietary stage to that of an integral part of the university system, on an academic equality with the university medical school. Authentic and detailed information is given of the financial, physical and educational equipment of each and every institution now in operation in the country and Canada.

Conclusions.—From the mass of evidence thus obtained, the following main conclusions are reached: A. That dentistry is an essential department of "health service," affecting the physical welfare of the individual and often the duration of life. B. Dental service demands the same educational status as general medicine, as to pre-professional and professional studies, but owing to the highly specialized procedures peculiar and necessary to dental practice, dental education should be, at least for the present, separate from, but closely affiliated with, general medical education. Such adjustment can be achieved ideally only under university management.

Recommendations.—The following recommendations are made: A. That the minimum pre-dental college requirement be two years, during which, in addition to cultural studies, special courses to test the vocational aptitude of the student be required. B. That the professional undergraduate curriculum be arranged within three years, preferably of more than eight months each, and designed for the training of general practitioners only. C. One year or more of *graduate* work in the main departments of oral specialization, as, oral diagnosis, oral surgery, orthodontia, periodontia, dental prosthesis, etc., with an advanced degree in recognition of qualification to practice these specialties.

Graduate Work Plan.—This five-year program with provision for graduate work constitutes the "two-three-graduate" plan, in contrast to the "two-four" plan of two years of pre-dental and four professional undergraduate years, which has obtained in New York State and elsewhere. This important change has been the subject of much debate on the ground that to reduce the dental curriculum by one year would be a retrograde step. In reality, however, it is an advance step educationally, for the purpose of the "two-three-graduate" plan is to remove from the dental curriculum certain courses proper to the pre-dental college years, thereby concentrating the undergraduate dental work, while at the same time the academic year will be lengthened to include part of the now unnecessarily long summer vacation time. The total content in academic credit will be substantially the same, while a year of the student's time will be saved. In short, the proposed change is a rearrangement of courses which will be sound pedagogically, and which will effect an important economy of time.

The fact is of interest that within the year of the publication of the Carnegie bulletin the Educational Department of the State of New York has approved a change whereby a three-year dental curriculum on the basis of the four-quarter or the *trimester* plan may be substituted for

the four regular dental years heretofore required. The working out of this new educational scheme as ap-

plied to dentistry will necessarily require earnest study and experimentation covering a period of years.

PUBLIC HEALTH AND HYGIENE

BY CHARLES EDWARD AMORY WINSLOW

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DISEASES

Typhoid Fever in Montreal.—The outstanding event of the year 1927 in American public health,—and of a profoundly disheartening kind,—was the typhoid epidemic at Montreal in the spring and summer. (See "Report of a Special Board of the U. S. Public Health Service on the Montreal Typhoid Situation," *American Journal of Public Health*, vol. 17, pp. 783-792). It has been hoped that extensive typhoid epidemics in civilized communities were things of the past; yet Montreal with a population of 684,500 had, between March 1 and July 16, 5,014 reported cases of typhoid fever with 488 deaths, which will yield an annual death rate of over 70 per 100,000 at the least, without allowance for deaths in the other eight months of the year.

Ninety per cent of the cases used the milk of one dairy (the Montreal Dairy Company, Ltd.) which was supposed to be effectively pasteurized. Official control appears to have been grossly inadequate, so that after a first peak of the epidemic in March, a second peak was allowed to develop in May. On July 7 the board of investigation of the U. S. Public Health Service recommended "that state and local health officials and other persons concerned be advised that Montreal is not now, from a typhoid fever standpoint, a comparatively safe city for tourists from the United States to visit and is not likely to be such for months yet to come, unless local health service in the city of Montreal and the vicinity thereof promptly is made much more adequate than it now is."

It is an extraordinary fact that a great city should lay itself open to such an indictment from the health

officials of a neighboring nation; but if the occurrence merely serve as a warning to politicians everywhere that the subject of public health is a dangerous plaything it may serve a useful purpose.

Endemic Typhus.—It has for many years been recognized that a mild form of typhus fever was prevalent in various sections of the United States, and recent studies by Kenneth Maxcy of the U. S. Public Health Service (as presented before the American Public Health Association at Cincinnati in October) have made it clear that this disease is more widespread than had been supposed. It appears to be indistinguishable from typical European typhus except in three respects. It is generally milder, it is primarily a summer disease rather than a winter disease, and it is not associated with the presence of body lice. These facts strongly suggest that we have here to deal with the same germ, but transmitted by a different arthropod carrier.

Undulant Fever.—The puzzling relationship between Malta fever and undulant fever in man and contagious abortion in cattle has been substantially clarified during the year by the work of C. M. Carpenter of New York, P. F. Orr in Michigan and J. G. McAlpine and F. L. Mickler in Connecticut (all presented before the American Public Health Association at Cincinnati). It appears probable that we have to do with three closely related strains,—the typical *B. melitensis* of Bruce which occurs in goat's milk and goat's milk products and causes Malta fever; a porcine strain which occasionally infects cattle and either directly or indirectly causes undulant fever in man; and the usual bovine strain (*B. abortus*) which causes contagious abortion in

cattle but which appears to have a very low virulence for man.

Poliomyelitis.—The year was marked by a very definite recrudescence of poliomyelitis in many states. Massachusetts reports half as many cases as in the 1916 epidemic. The only important light thrown on the etiology of this disease during recent years has been the demonstration that it may under certain circumstances be milk-borne (A. C. Knapp, E. S. Godfrey and W. L. Aycock, "An Outbreak of Poliomyelitis," *Journal of the A. M. A.*, vol. 87, pp. 635-639). It is not, of course, believed that this is the normal mode of transmission of the disease; but the demonstration that poliomyelitis as well as undulant fever can be spread by milk, together with the Montreal typhoid epidemic, serve to emphasize the grave risk involved in the consumption of any milk that is not properly pasteurized.

Electrical Method of Determining Virulence of Diphtheria Bacilli.—In the laboratory field, the demonstration that virulent and avirulent diphtheria bacilli may be differentiated by determining their electrophoretic charge is of great practical value and of considerable theoretical interest. A preliminary communication on this subject (I. S. Falk, F. O. Tonney, J. L. White and L. B. Jensen, *American Journal of Public Health*, vol. 17, pp.

714-721) was followed by a later report made at the Cincinnati meeting of the A. P. H. A. By the new technique described in this last communication it is possible, through the use of a simple technique, to make in half a minute under the microscope a differentiation which takes several days by the animal method; and the implications are strong that the avirulent diphtheria are really toxicogenic and differ from virulent strains only in the fact that their toxins diffuse less readily into the surrounding menstrium.

Venereal Disease.—Accurate knowledge of the actual incidence of venereal disease has been scanty,—almost non-existent, in fact, except for the data yielded by the draft examinations of 1917 and 1918, and these examinations dealt only with males of military age. The American Social Hygiene Association has recently conducted several intensive surveys of this problem based on data, as to the number of cases actually under care on a given day obtained directly from the physicians of a given community. The first of these studies to be published deals with venereal disease prevalence in Detroit (W. M. Brunet and M. S. Edwards, "Venereal Disease Information," *U. S. Public Health Service*, vol. 8, pp. 197-208). Its main results may be summarized in the following table:

PREVALENCE RATE PER 1,000 POPULATION, DETROIT, MICH., MAY 15, 1926

Age	Syphilis			Gonorrhea		
	Under 16	16 and Over	All Ages	Under 16	16 and Over	All Ages
Male	1.3	11.0	8.3	0.3	13.2	9.6
Female	1.4	7.4	5.5	0.9	4.0	3.0

These results check very well with the data obtained in the draft examinations, allowing for differences in age and sex; and for the first time they give us a really satisfactory basis for estimating the importance of this vital problem.

Industrial Poisons.—The National Safety Council, which has performed admirable service in the campaign against industrial accidents, continues to broaden its scope by the study of industrial poisons. At its Chi-

cago meeting last fall a Committee on Spray Coating made an exhaustive report on this problem which will shortly be published. It shows that grave dangers are involved in the use of the spray gun for the application of paints, varnishes or enamels containing lead, benzol or free silica and recommends, as the most satisfactory way out of the difficulty, the employment of material free from these substances. If local exhaust ventilation is relied upon as a safe-

guard, the exhaust velocity should be 200 linear feet per minute and if masks or respirators are used they should be of the positive-pressure type.

MEDICAL CARE

Status of the Private Duty Nurse.

—The Committee on the Grading of Nursing Training Schools (Dr. William Darrach, chairman) has been obtaining highly significant results in regard to the first of the problems which it has undertaken to study, the supply and demand for nursing service. (M. A. Burgess, *Annual Report of the National League of Nursing Education*, 1927, pp. 202-213). It appears from data collected by some 20,000 questionnaires in ten typical States that the total supply of nurses is apparently adequate but that local and temporary shortages (in rural districts, on Sundays and holidays, for special types of cases) do exist as a result of faulty organization. Private duty nursing, as at present practiced on a purely individualistic basis, is not only costly to the patient but unsatisfactory to the nurse who loses one day a week in waiting for a case even during the month of March, when sickness is at its height, works unduly long hours when she does work and earns (as a result of idle time) a meager income. She has no prospect of advancement, and 45 per cent of the private duty nurses in the field indicate their disinclination to continue. Public health nurses and institutional nurses, on the other hand, report a reasonably adequate and progressively increasing income and general satisfaction with their work. The answer is clear, —organization of nursing in the homes, about either visiting nurse societies, hospitals or registries as a nucleus.

Cost of Medical Care.—Perhaps the most important book of the year in the health field is *American Medi-*

cine and the People's Health, by H. H. Moore (N. Y., Appleton), a careful and dispassionate survey of available data in regard to the adequacy and cost of medical service available for the care of illness and of the various experiments which have been made by health departments, hospitals and dispensaries, industries, schools and colleges, to meet the need for such services. The better organization of the medical resources of the community to give preventive and curative care to all classes and all localities is the major health problem of the future. A strong national Committee on the Cost of Medical Care has been organized to study this problem with President R. L. Wilbur of Leland Stanford as its Chairman.

The Mississippi Floods.—A more encouraging picture is to be found in the story of the Mississippi floods and their aftermath from the standpoint of the public health. When the Southern States were faced with this tremendous emergency, the Red Cross and the state health officials realized to the full the dangers involved and supplemented the work of material relief by the most vigorous efforts to cope with the possibility of epidemic disease by the protection of water supplies, the improvisation of methods of dealing with wastes and by wholesale immunization against smallpox and typhoid fever, followed later by systematic measures of malaria control. As a result of this comprehensive and effective program, the typhoid fever death rate in the flood states was last summer lower than ever before. The occasion was utilized to stimulate the development of permanent full-time health units throughout the region, and out of 92 areas needing such units and able to support them 87 have already effected their organization. Thus a catastrophe was converted into a permanent benefit.

VITAL STATISTICS

VITAL STATISTICS

By WILLIAM H. DAVIS

CHIEF STATISTICIAN FOR VITAL STATISTICS, BUREAU OF THE CENSUS,
DEPARTMENT OF COMMERCE

FEDERAL MORTALITY AND BIRTH STATISTICS

Federal mortality and birth statistics are compiled for only that part of the United States known as the death registration area and birth registration area. (Mortality Statistics and Birth, Stillbirth, and Infant Mortality Statistics—annual reports—published by the Bureau of the Census.) A registration area is that portion of the United States recognized by the Federal Government as having adequate registration laws, and at least 90 per cent complete registration. January 1, 1928, the death registration area includes 43 states,

the District of Columbia, the Territory of Hawaii, the Virgin Islands, and 11 registration cities in non-registration states, or about 94 per cent of the total population of the United States, and the birth registration area includes 41 states, the District of Columbia, and the Virgin Islands, or about 90 per cent of the total population.

STATE STATISTICS

State Growth.—The following tables show the state growth of these two areas: States in birth registration area; States in death registration area:

STATES IN DEATH REGISTRATION AREA

State	Year Admitted	State	Year Admitted	State	Year Admitted
Massachusetts	1880	Pennsylvania	1906	Tennessee	1917
New Jersey		South Dakota ⁴	1908	Illinois	1918
Dist. of Columbia ²		Washington		Louisiana	
Connecticut		Wisconsin	1909	Oregon	
Delaware ³		Ohio		Delaware	
New Hampshire	1890	Minnesota	1910	Florida	1919
New York		Montana		Mississippi	
Rhode Island		North Carolina ⁶		Nebraska	1920
Vermont		Utah		Georgia ⁷	
Maine	1900	Kentucky	1911	Idaho	1922
Michigan		Missouri		Wyoming	
Indiana	1900	Virginia	1913	Iowa	1923
California		Kansas	1914	North Dakota	1924
Colorado	1906	North Carolina ⁶	1916	Alabama	1925
Maryland		South Carolina		West Virginia	
				Arizona	1926

¹ Census year ending May 31.

² Included in registration states.

³ Dropped from the area in the census year 1900.

⁴ Dropped from the area in 1910.

⁵ Included only municipalities having a population of 1,000 or more in 1900.

⁶ The remainder of the state of North Carolina was added to the registration area in 1916. (See note 5.)

⁷ Dropped from the area for 1925; state registration law declared unconstitutional.

BIRTH AND DEATH RATES

Death Rates.—The death rate of the registration area for 1926 was 12.2. Of the 1,285,927 deaths which occurred in the death registration area in 1926, more than one-half were due to six causes: Diseases of the heart, influenza and pneumonia,

nephritis, cancer, tuberculosis, bronchitis, and bronchopneumonia. The death rate from accidents (excluding automobile accidents) has declined from 73 per 100,000 population in 1918 to 60.7 in 1926, but the death rate from automobile accidents has increased from 9.3 to 17.9.

XXIII. MEDICAL SCIENCES

STATES IN BIRTH REGISTRATION AREA

State	Year Admitted	State	Year Admitted
Connecticut	1915	Washington	1917
Maine		Wisconsin	
Massachusetts		California	1919
Michigan		Oregon	
Minnesota		South Carolina ²	
New Hampshire		Nebraska	1920
New York		Delaware	
Pennsylvania		Mississippi	1921
Rhode Island ¹		New Jersey	
Vermont		Illinois	1922
District of Columbia ²	1916	Montana	
Maryland		Wyoming	
Indiana		Florida	1924
Kansas		Iowa	
Kentucky	1917	North Dakota	1925
North Carolina		West Virginia	
Ohio		Arizona	1926
Utah		Idaho	
Virginia			

¹ Dropped from the area in 1919; readmitted in 1921.² Included in registration States.³ Dropped from the area for 1925.

Birth Rates.—The birth rate of the birth registration area for 1926 was 20.6, the record low rate since the establishment of the area in 1915, which year had a record high rate of 25.1. The rate of natural increase indicated by the difference between

the birth rate and the death rate was 11 per 1,000 for 1915 and 8.4 for 1926.

Infant Mortality.—The infant mortality rate for the birth registration area was 73 for 1926—quite below the 1915 rate, 100.

BIRTH REGISTRATION AREA: 1915-1926

Year	Birth Registration Area							
	Population ¹		Land Area		Births ²		Deaths ²	
	Number	Per Cent of United States Total	Square Miles	Per Cent of United States Total	Number	Rate per 1,000 Population	Number	Rate per 1,000 Population
1915	30,936,179	31.1	292,860	9.8	776,304	25.1	436,593	14.1
1916	32,788,670	32.5	302,801	10.2	818,983	25.0	486,682	14.8
1917	54,771,416	53.6	794,819	26.7	1,353,792	24.7	776,222	14.2
1918	55,515,241	53.6	794,819	26.7	1,363,649	24.6	996,627	18.3
1919	61,483,423	58.6	1,075,506	36.2	1,373,438	22.3	798,104	13.0
1920	63,659,441	59.8	1,152,314	38.7	1,508,874	23.7	836,134	13.1
1921	70,425,705	65.3	1,209,224	40.7	1,714,261	24.3	825,511	11.7
1922	78,885,852	72.2	1,508,946	50.7	1,774,911	22.5	938,545	11.9
1923	79,952,425	72.2	1,508,946	50.7	1,792,646	22.4	992,237	12.4
1924	85,424,653	76.2	1,689,576	56.8	1,930,614	22.6	1,006,994	11.8
1925	87,636,000	76.0	1,683,103	56.6	1,878,880	21.4	1,030,518	11.8
1926	89,988,000	76.8	1,880,267	63.2	1,856,068	20.6	1,093,511	12.2

¹ Estimated July 1.² Exclusive of stillbirths.

COGNATE SOCIETIES

DEATH REGISTRATION AREA: 1880-1926

Year	Estimated Population, July 1, of Continental United States	Registration Area in Continental United States					
		Estimated Population, July 1		Land Area		Deaths from All Causes ¹	
		Number	Per Cent of Total	Square Miles	Per Cent of Total	Number	Rate per 1,000 Population
1926	117,136,000	105,170,000	89.8	2,221,892	74.7	1,285,927	12.2
1925	115,378,000	103,108,000	89.4	2,108,072	70.9	1,219,019	11.8
1924	112,078,611	99,200,298	88.5	2,091,456	70.3	1,173,990	11.8
1923	110,663,502	96,986,371	87.6	2,021,237	68.0	1,193,017	12.3
1922	109,248,393	93,241,643	85.3	1,965,589	66.1	1,101,863	11.8
1921	107,833,284	88,667,602	82.2	1,726,012	58.0	1,032,009	11.6
1920	106,418,175	87,486,713	82.2	1,726,012	58.0	1,142,558	13.1
1919	105,003,065	85,166,043	81.1	1,649,281	55.5	1,096,436	12.9
1918	103,587,955	81,333,675	78.5	1,546,166	52.0	1,471,367	18.1
1917	102,172,845	74,984,498	73.4	1,349,629	45.4	1,068,932	14.3
1916	100,757,735	71,349,162	70.8	1,307,819	44.0	1,001,921	14.0
1915	99,342,625	67,095,681	67.5	1,228,704	41.3	909,155	13.6
1914	97,927,516	65,813,315	67.2	1,228,644	41.3	898,059	13.6
1913	96,512,407	63,200,625	65.5	1,147,039	38.6	890,848	14.1
1912	95,097,298	60,359,974	63.5	1,106,777	37.2	838,251	13.9
1911	93,682,189	59,183,071	63.2	1,106,734	37.2	839,284	14.2
1910	92,267,080	53,831,742	58.3	997,978	33.6	805,412	15.0
1909	90,691,354	50,870,518	56.1	765,738	25.7	732,538	14.4
1908	89,073,360	46,789,913	52.5	725,117	24.4	691,574	14.8
1907	87,455,366	43,016,990	49.2	603,151	20.3	687,034	16.0
1906	85,837,372	41,983,419	48.9	603,066	20.3	658,105	15.7
1905	84,219,378	34,052,201	40.4	212,744	7.2	545,533	16.0
1904	82,601,384	33,345,163	40.4	212,744	7.2	551,354	16.5
1903	80,988,390	32,701,083	40.4	212,762	7.2	524,415	16.0
1902	79,365,396	32,029,815	40.4	212,762	7.2	508,640	15.9
1901	77,747,402	31,370,952	40.3	212,770	7.2	518,207	16.5
1900	75,994,675	30,765,618	40.5	212,621	7.1	539,939	17.6
1900 ²	62,947,714	23,807,269	37.9	176,878	5.9	512,669	17.8
1890 ²	50,155,783	19,659,440	31.2	90,695	3.0	386,212	19.6
1880 ²		8,538,366	17.0	16,481	0.6	169,453	19.8

¹ Exclusive of stillbirths.

² Census year ending May 31.

COGNATE SOCIETIES

ALLIANCE AGAINST FOOD FRAUD.—300 Madison Ave., New York, N. Y.
ALLIED DENTAL COUNCIL.—425 Lafayette St., New York, N. Y.
AMERICAN ACADEMY OF APPLIED DENTAL SCIENCES.—587 Fifth Ave., New York, N. Y.
AMERICAN ASSOCIATION FOR MEDICAL PROGRESS.—370 Seventh Ave., New York, N. Y.
AMERICAN COLLEGE OF SURGEONS.—40 E. Erie St., Chicago, Ill.
AMERICAN GYNECOLOGICAL SOCIETY.—104 S. Michigan Ave., Chicago, Ill.
AMERICAN HEART ASSOCIATION, INC.—370 Seventh Ave., New York, N. Y.
AMERICAN INSTITUTE OF HOMEOPATHY.—22 E. Washington St., Chicago, Ill.

AMERICAN LARYNGOLOGICAL ASSOCIATION.—1811 Spruce St., Philadelphia, Pa.
AMERICAN LARYNGOLOGICAL, RHINOLOGICAL AND OTOLOGICAL SOCIETY, INC.—145 W. 58th St., New York, N. Y.
AMERICAN MEDICAL ASSOCIATION.—17 West 43rd St., New York, N. Y.
AMERICAN OCCUPATIONAL THERAPY ASSOCIATION.—370 Seventh Ave., New York, N. Y.
AMERICAN OPHTHALMOLOGICAL SOCIETY.—1819 Chestnut St., Philadelphia, Pa.
AMERICAN OSTEOPATHIC ASSOCIATION.—400 S. State St., Chicago, Ill.
AMERICAN PHYSIOLOGICAL SOCIETY.—Rockefeller Institute, New York, N. Y.

XXIII. MEDICAL SCIENCES

- AMERICAN PUBLIC HEALTH ASSOCIATION.—370 Seventh Avenue, New York, N. Y.
- AMERICAN SOCIETY FOR THE CONTROL OF CANCER.—370 Seventh Ave., New York, N. Y.
- AMERICAN SOCIETY OF CLINICAL PATHOLOGISTS.—Children's Hospital, Denver, Col.
- AMERICAN VETERINARY MEDICAL ASSOCIATION.—785 Book Building, Detroit, Mich.
- ASSOCIATION OF MEDICAL COLLEGES.—3431 Lexington St., Chicago, Ill.
- ASSOCIATION OF MILITARY SURGEONS OF THE UNITED STATES.—Army Medical Museum, Washington, D. C.
- AMERICAN SOCIETY OF TROPICAL MEDICINE.—Box 131, Pennsylvania Ave. Station, Washington, D. C.
- FRIENDS OF MEDICAL PROGRESS, INC.—234 Berkeley St., Boston, Mass.
- GORGAS MEMORIAL INSTITUTE.—1598 Madison Avenue, New York, N. Y.
- NARCOTIC DRUG CONTROL LEAGUE, INC.—40 Wall St., New York, N. Y.
- NATIONAL LEAGUE FOR NURSING EDUCATION.—370 Seventh Ave., New York, N. Y.
- NATIONAL TUBERCULOSIS ASSOCIATION.—370 Seventh Ave., New York, N. Y.
- NEW YORK ACADEMY OF MEDICINE.—17 W. 43rd St., New York, N. Y.
- NEW YORK ACADEMY OF SCIENCES.—77th St. and Central Park West, New York, N. Y.
- OSTEOPATHIC AID ASSOCIATION.—103 Park Avenue, New York, N. Y.
- PUBLIC HEALTH COMMITTEE, 17 W. 43rd St., New York, N. Y.
- SOCIETY OF AMERICAN BACTERIOLOGISTS.—Cornell University, Ithaca, N. Y.
- SOCIETY OF MEDICAL JURISPRUDENCE.—17 W. 43rd St., New York, N. Y.
- SOUTHERN MEDICAL ASSOCIATION.—Empire Bldg., Birmingham, Ala.
- UNITED BOARD OF HEALTH CONTROL, INC.—233 Broadway, New York, N. Y.
- UNITED HOSPITAL FUND.—105 E. 22nd St., New York, N. Y.
- UNITED STATES HAY FEVER ASSOCIATION.—Bethlehem, N. H.

DIVISION XXIV

PHILOSOPHICAL AND SOCIAL SCIENCES

PHILOSOPHY

BY A. A. ROBACK

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INTRODUCTORY

If a remote application of the Sechner-Weber psychophysical law might be introduced in connection with the impression which the year 1927 has left in the annals of American philosophy, it would be proper to point out that beside the meteoric year of 1926 when the International Congress took place in the United States, its successor must appear somewhat obscured. And yet if we disregard the éclat and brilliancy which the distinguished guests have lent the atmosphere, there is more to show for 1927 than for its predecessor. To be sure, we cannot as yet, unless one is to believe the proverbial "one" enthusiastic "reviewer," put our fingers on an epoch-making work, but the philosophical balance sheet for the past year in the United States exhibits a creditable gain.

It is true that in drawing up the figures, we are at times puzzled as to which is an American and which a British contribution. Curious transplantations and circumstances make it difficult for us to classify the authors or their books along geographical lines. Thus, is Santayana still to be regarded as an American philosopher, although it is now nearly half a generation since he left Harvard and the United States? Has Whitehead sufficiently acclimated himself to his American milieu, so that his books might be spoken of as American works? As for Bertrand Russell, the question becomes even more of a poser.

For all that, since we are dealing with a single year, and because often the place of publication determines the nativity of a given book, it is possible to consider all three distinguished philosophers as Americans for our purpose, especially as the works to be cited (in this connection Russell's *Analysis of Matter* is not to be included here) have all been printed and published in the United States, and even Russell has, by virtue of his sojourn in the United States where he has been active as a lecturer and writer, become identified, at least in his lighter phases, with American philosophy.

RECORDS AND PUBLICATIONS

The Philosophical Congress.—Perhaps we may begin with the mention of the *Proceedings of the Sixth International Congress of Philosophy*, which was edited by E. S. Brightman (LXXXVII + 716 pp., Longmans, Green), not only because it is the bulkiest philosophical book published during the year, but also because its contents hark back to the previous year and imply a certain priority over other books. Even those who were present at the Congress could hardly gauge the scope of the papers read and obtain a perspectival view of the event until they looked into this volume.

Books for Lay Readers.—The overproduction of textbooks in the last few years has now given way to a reaction; and what philosophical works of a general nature have appeared during 1927 have been in-

tended for the lay reader rather than for the college student. F. L. Miller's *A History of Philosophy* (XIV+352 pp., Wagner) is an exception. Perhaps we are nearing the stage when books will be written that are both accessible to the average intelligent person and profitable to the student. Bertrand Russell's *Philosophy* (VI+307 pp., Norton), which may be regarded as an expanded and up-to-date edition of his *Problems of Philosophy*, is a volume calculated to stimulate such readers as are interested in *problems* rather than in *stories*. As usual, Russell ploughs up the ground without, however, actually planting the seed; and in one or two instances, as in the discussion of Behaviorism, he seems to straddle rather awkwardly. His heart is apparently with the psychological radicals while his analytic head is against them.

Another general book, which is not a textbook, is Baker Brownell's popularly written *The New Universe* (X+455 pp., Van Nostrand), which deals with almost everything under the sun, from physics to sociology and religion after the fashion of Dorsey's *Why We Behave Like Human Beings*, but with greater philosophical insight.

LOGIC AND EPISTEMOLOGY

It is often interesting to ascertain which of the different departments of philosophy has made the most notable contributions during the year. The ascendancy of ethics over metaphysics or theory of knowledge during some particular year may of course be only fortuitous, but the steady growth of a certain branch of philosophy is frequently indicated by the number of books appearing under that rubric. Within the last twelve months there can hardly be any doubt that logic has been the point of intersection of many lines of discussion. With the problems of relativity still in the foreground and the *rapprochement* between physicists, mathematicians and philosophers, becoming more and more established, it is only to be expected that logic would furnish the basis for the *entente*.

Bridgman Thesis.—Indeed it is in Bridgman's *The Logic of Modern Physics* (XIX+220 pp., Macmillan) that we find the physicist's formula for dovetailing two disciplines which sometimes appear to be out of joint, especially in the light of recent researches in mathematical physics. The burden of Bridgman's thesis is that every concept must be defined *operationally*. There seems to be in this position a decided touch of *instrumentalism*. Certainly in the age-old conflict between the static and the dynamic, it is the latter point of view which has gained the supremacy in the last decade, thanks to the horizons disclosed by workers in the field of the physical sciences. *The Logic of Modern Physics* has been hailed by some reviewers as a towering work. In reality what makes this volume outstanding is not its novelty of conception so much as its concrete and systematic application of the principle outlined to the newly acquired facts, by means of carefully chosen illustrations which none but the expert could muster.

Symbolism.—It is not clear whether Whitehead's *Symbolism, Its Meaning and Effect* (88 pp., Macmillan) comes under the head of logic, even though its title would give this implication; for in this little book which constitutes the Barbour-Page lectures given at the University of Virginia, the author has dealt with the concept of the symbol on a wide, though not comprehensive, scale. True, the bulk of the material is epistemological in nature, but the interpretation of Hume's doctrines and especially the treatment of symbolism in the life of a people and in society at large indicate the ramifications of the subject.

With his usual lucidity, Whitehead states that "the human mind is functioning symbolically when some components of its experience elicit consciousness, beliefs, emotions and usages, respecting other components of its experience." This is no doubt a mathematico-logical definition of the symbol. It is inclusive; but the psychological phase of the symbol should not be overlooked. Ever since the time of Brentano, the symbol has

received the close attention of philosophers and psychologists like Meinong, Husserl, Witasek, and in another direction from Cassirer and C. K. Ogden and Richards; not to mention the philological writers. The Study of the Symbol in its broadest sense is fast becoming a branch of science in itself.

In C. W. Morris's "The Concept of the Symbol" (*Journal of Philos.*, May 12 & 26) we have a psychological and even physiological definition of the symbol, viz., as a "given or experienced substitute stimulus that leads to a reinstatement of the original stimulus in a form that is observable only from the self-inclusive point of view." The behavioristic interpretation of the symbol, however, is scouted as not discriminating between the original and the substitute.

Whitehead has not concerned himself with the various approaches to the study of the symbol. He seems to take it for granted that the "symbol" is under the tutelage of his own branch of science, and does not inquire after the behavioristic or other interpretations. But Whitehead's asset is the rigidity of his terms, and the controlled discursiveness of his procedure. The transition from the symbol to the meaning (the "Symbolic reference") is called "organic functioning." There are many stimulating passages in the discussion of the two modes of experience (1) the perceptual, which is subdivided into (a) presentational immediacy and (b) causal efficacy, and (2) conceptual analysis.

Of a lighter vein, although not less suggestive, are the essays brought forth by the mathematical philosopher or perhaps better, philosophical mathematician, C. J. Keyser, under the title of *Mole Philosophy* (X+234 pp., Dutton).

Several new textbooks in logic have been added to the honored list fathered by Aristotle's *Organon*. Among these are *A Guide to Thinking* (IV+252 pp., Doubleday, Page), by O. Templin and Anna McCracken, H. B. Smith's *Symbolic Logic* (135 pp., Crofts), *The Function and Forms of Thought*, by A. E. Avey (XII+395, Holt), D. S. Robinson's *Illus-*

trations of the Methods of Reasoning (XIII+346 pp., Appleton), and F. Barry's *Scientific Habit of Thought* (Columbia Univ. Press).

METAPHYSICS

The unpopularity of this ancient branch of philosophy can be sensed by the dearth of books on this subject in the past few years, and particularly in 1927. To be sure, writers will make an effort to see to it that the term does not fall entirely into desuetude. Thus Hook has labelled his well-written articles on methodology in *The Monist* (July & Oct.), "The Metaphysics of the Instrument," but one may question the appropriateness of the first noun in this connection.

Santayana.—His newest book, *The Realm of Essence* (XXIII+183, Scribner's), which is a sequel to his *Scepticism and Animal Faith*, while forming the first of a series of books on the philosophy of Being and Essence, does seem to bring us closer to the metaphysical problem. It is not long, however, before we perceive that, having sponsored, in a modern setting, the Cartesian method of doubt, Santayana proceeds to develop the naturalistic system which began to take shape in his *Reason in Society*, without taking any account of traditional metaphysics. It is in this volume that Santayana approaches the philosophy of Spinoza more closely than in any other of his works. There is greater zeal displayed here, and many of his sentences are reminiscent of the propositions in the *Ethica* of the Jewish philosopher in Amsterdam. In *The Realm of Essence* Santayana guides the reader, he not merely fascinates him as in most of his previous books. Essence is set up above Being and Character or characteristic and becomes the prime objective of philosophy. Not the least important part of the small book is the appendix, where the author attempts to bring his philosophy into line with that of Husserl, Whitehead and even the Hindu metaphysicians—a wholesome sign in one who has been delicately charged with disagreeing for the sake of being individual.

Dewey.—This leads to the notice of the polemic article by Dewey, "Half-hearted Naturalism" (*Journal of Philos.*, Feb. 3, 1927), in which the dean of American philosophers takes Santayana to task for disclosing two incompatible sides to his system. As a naturalist the latter appeals to Dewey, but when the esthetic urge becomes too dominant in him, there is a flavor of mysticism about the Spanish-American thinker. It is in this rather important article that Dewey is ready to accept much of Santayana's thought in spite of the fact that, as he contends, Santayana frequently offers disclaimers.

It is apparent that Dewey and Santayana are on the same platform in combating idealistic systems, and they may both well be regarded as naturalists, but with the one, the emphasis is on the social; with the other, it is on the individual.

INTERPRETATION

The same naturalistic interpretation is evidenced in Santayana's little book on *Platonism and the Spiritual Life* (94 pp., Scribner's) which seems to have been provoked by Dean Inge's for the nonce roseate account of Plato's philosophy. The neo-Spinozist does not share the sublime view of the "gloomy Dean," and with his characteristic elegance of diction and poetic style turns Plato into a prosaic teacher of morals and conventional religion.

The Scotch "common sense" philosophy which has been, it would seem, undeservedly neglected for a number of years has received a touching up through J. O. McKendree in his *Empiricisms and Intuitionism in Reid's Common Sense Philosophy* (134 pp., Princeton Univ. Press).

An interpretation of a different sort is to be had in J. K. Hart's *Inside Experience* (XXVI+287, Longmans, Green) which is a treatise developed along naturalistic lines, colored by Dewey's philosophy.

The correspondence between Locke and Clarke edited by B. Rand (XVI+605, Harvard Univ. Press) together with an introduction offers an objective biographical interpretation of

Locke, as well as a key to the development of his philosophical ideas.

SOCIAL PHILOSOPHY

The most important works in this field for the year are Dewey's *The Public and Its Problems* (VI+224 pp., Holt) and T. V. Smith's *The American Philosophy of Equality* (XI+395 pp., Univ. of Chicago Press), Triggant Burrow's *The Social Basis of Consciousness* (XVIII+256 pp., Harcourt, Brace) may also be regarded as a contribution to social philosophy. The first part of the book is called "The Philosophy of the Neuroses." In E. Jordan's *Forms of Individuality* (X+469 pp., Laut) the fundamental idea is that "corporeity" constitutes the essence of individuality.

ETHICS AND CHARACTER

Compared with logic, the study of ethics has not been cultivated extensively, unless we dwell on the articles in periodicals. Several searching reviews of the axiological problem have been called forth by R. B. Perry's treatise on *Values*, the papers of W. M. Urban and M. W. Calkins deserving particular mention as serving to clarify the issue.

The only full-sized volume dealing with ethics proper is A. K. Rogers' *Morals in Review* (XII+456 pp., Macmillan), C. L. Sherman's *The Moral Self* (X+365 pp., Ginn) is an elementary manual, while McDougall's *Character and the Conduct of Life* (XVI+394, Putnam) is not a study of character or ethics so much as a wholesome series of practical exhortations with regard to the business of living, based on sound psychological principles. A. A. Roback's *Psychology of Character* (XXIV—595 pp., Harcourt, Brace) while not written from the standpoint of a moralist, nevertheless embraces the philosophy of character as well as a chapter on the relation of character to the values. The same author's *Bibliography of Character and Personality* (340 pp., Sci-Art) lists and classifies about 3,500 publications on character as well as personality in a dozen or more languages.

SCHOLASTICISM

The first volume of *The New Scholasticism* (Catholic University of America) which began to appear in January, 1927, has fulfilled the program, promised by the editors, most creditably. Not only the original articles, but also the critical notices give evidence of careful and vigorous writing. Perhaps it would not be out of place to note here, too, that a new series of monographs, *Archives Historique doctrinale et littéraire du moyen âge*, although it appears in France, is being conjointly edited by E. Gilson, Professor of Philosophy at Harvard University. It is to be noted, too, that the only History of Philosophy which appeared during the year is written from the scholastic point of view (L. F. Miller's *A History of Philosophy*).

PERSONALISM

Although the Personalist group is rather small and scattered over the country, we ought not to omit from this survey the title "*The Philosophy of Personalism* by A. C. Knudson (Abingdon) which, following Flewelling's *Creative Personality*, broadens the scope of this school. *The Personalist*, after several years of groping can now take its place, so far as its writers are concerned, with the other philosophical journals in the United States.

AMERICAN PHILOSOPHY ABROAD

This review is not intended to include the discussion of publications other than American, yet one cannot overlook the compendious article on American philosophy, "Die Philosophie in den vereinigten Staaten unter besonderer Berücksichtigung der Gegenwart" by Harry Slochower in Reichl's *Philosophischer Almanach*, edited by Erich Rothacker (vol. IV *Probleme der Weltanschauungslehre* Darmstadt, 1927).

Hitherto American philosophy had been befriended by the French, perhaps because of the contact between William James and the French thinkers of his time. Latterly, it seems that American philosophy is being taken somewhat seriously even by the serious Germans; and Slochower's

essay is written with understanding and sympathy. This writer has endeavored to give in the brief space of 107 pages not only a sketch of the early trends, as well as of the contemporary schools, but also an estimate of the individual philosophers of the present time. The study is systematic and comprehensive, but somewhat journalistic in tone (marred by numerous misprints) and betrays a personal bias here and there with reference to contemporary men. Slochower's survey will probably furnish the basis of a book on American philosophy in German.

It is not easy to agree with Slochower on the "interesting agreements" between neo-realism (here a very striking slip occurs, for neo-realism (Neu-realism) appears as *Neuralismus*. Whether the slip be due to a *lapsus calami* or to a misprint or the the proofreader's illusion, it offers food for thought to the Freudian ideologist) and German phenomenology, but some of the seven points are undoubtedly correct. The problem for both schools is, according to Slochower, the following: "If mind is only an epiphenomenon, if everything is already out there and mind cannot exercise any effectiveness, how can it do any *selecting*?" Whether Husserl would accept this formulation of the problem as his own is perhaps to be seen.

Broad and up-to-date as the survey is, there are yet a number of important omissions. Personalism as an American school is not treated at all, although Bowne's name is mentioned in connection with idealism. The scholastic movement in the United States is ignored. Evidently, too, Slochower is not interested in the philosophy of value and the contemporary semi-religious phase of American philosophy.

It may be said by way of caution that unless European philosophers acquaint themselves with *all* of the periodicals and not merely with the *Journal of Philosophy*, important as it is, their surveys of American philosophy will necessarily exhibit gaps. Since American thought is becoming more and more an object of study in European academic centers, it will be

all the more essential to view the schools and individual trends of thought in a perspective, free from coterie bias.

AMERICAN PHILOSOPHICAL ASSOCIATION

After a year's interruption, because of the Philosophical Congress, the American Philosophical Association is, at the time of this writing, holding its annual session in Chicago. The Presidential Address by W. E. Hocking is entitled "What Does Philosophy Say?" Other papers include the following topics: "Social as Category," by John Dewey; "The Pragmatism of Peirce and Hegel," by H. G. Townsend; "An Hypothesis of Realms," by G. P. Conger; "Current Epistemology and Contemporary Ethics," by D. L. Evans; "The Paradox of Judgment," by J. Loewenberg; "Sense Qualities and Material Things," by S. P. Lamprecht and "What Has Beauty to Do with Art?," by C. J. Ducasse.

The Carus Lectures.—It is at these meetings in Chicago that the second series of the Carus Lectures is to be given by A. O. Lovejoy of Johns Hopkins University. His subject is: *A Critical Examination of the Contemporary Revolt Against Dualism*. Lecture I will take up the initial phase. Objective Relativism is the topic of Lectures II and III.

INTERNATIONAL LIBRARY OF PHILOSOPHY

It is worth noting casually that the well-known International Library of Philosophy and Scientific Method, which is being brought out by Kegan Paul, Trench, Trubner, in London, is recruiting its authors more and more on this side. Of the dozen books published in this library during the past year, only three or four are by British writers, and with the exception of Bertrand Russell's *The Analysis of Matter*, there is not a single philosophical work produced by them. On the other hand, aside from *The*

Psychology of Character, and *The Social Basis of Consciousness*, this library has added to its series, *Dialectic* by M. J. Adler and *Possibility* by S. Buchanan, both instructors in American institutions.

NEW PHILOSOPHICAL SOCIETY

A new philosophical society has been formed in Philadelphia, constituted by members of the Philosophical departments of the various colleges and universities in Philadelphia. The organization will be known as the Fullerton Club in commemoration of the late G. S. Fullerton, who was at one time Professor of Philosophy at the University of Pennsylvania.

OBITUARY

The grievous loss to the Sage School of Philosophy at Cornell University some time ago by the death of Prof. Creighton has been made irreparable by the loss of Prof. Ernest Albee who died on May 25, and by Prof. E. B. Titchener (Aug. 2) who, although a psychologist, was undoubtedly the chief pillar of the School.

On May 11 occurred the death of Prof. A. H. Lloyd, Dean of the Graduate School of Arts and Science at the University of Michigan and acting President of the University. On May 2, American aesthetics were deprived of one of its most serious students, H. R. Marshall, a founder of the New York Philosophical Club. Although by profession an architect, Dr. Marshall took an active part in the philosophical and psychological life of the country.

The violent death as a result of being struck by a motor car on Dec. 29, of Prof. H. N. Gardiner, of Smith College, removes a most genial personality and inspiring teacher from the ranks of American philosophy. Prof. Gardiner was one of the founders of the American Philosophical Association, its first secretary and, in 1907, officiated as its President.

PSYCHOLOGY

By WILBUR S. HULIN

PROFESSOR, PRINCETON UNIVERSITY

GENERAL

Increase in Publications.—About two thousand articles and books in psychology have been published in America in 1927. This production represents an increase in the psychological literature over previous years. The general interest in psychology both as a pure science and as a practical subject has widened. General interest is also deepening in the discrimination of the more soundly tested psychological theories. Nevertheless there is still a regrettable sphere of charlatanism which parades under the name of psychology. But, on the other hand, the acceptable legitimate field of psychology continues to be that which is quite within the scope of the American Psychological Association. The president of this association for the current year is Professor H. L. Hollingworth and the secretary is Professor S. W. Fernberger. The association at present numbers over 600 members.

In educational psychology, the meetings of the National Education Association at Dallas and at Seattle broke previous record attendances. The *Proceedings* (Vol. 65) contains over 250 papers and reports. The association established a new department of Lip-reading. A symposium on Feelings and Emotions was held at Wittenberg College on the occasion of the dedication of a new psychological laboratory. Papers were contributed by thirty-five distinguished psychologists who represented America and ten European nations. Psychology has suffered a deep loss in the death of Professor E. B. Titchener who for thirty years has been the leading exponent of the introspective *structural* school of psychology. At the time of his death in August there was on the press the first number of a new periodical, *The Journal of General Psychology*, which he was founding. Professor C. Murchison has now assumed editorship of the new periodical.

THEORETICAL

Books.—F. H. Lund has written a general textbook containing a new set of simplified illustrations: *Psychology, the Science of Mental Activity* (A. G. Seiler, 1927). L. R. Coleman and S. Commins have written a review of the several branches and schools of psychology: *Psychology, a Simplification* (Boni & Liveright, 1927). E. H. Cameron has designed a comprehensive textbook for mature students on the theoretical and practical aspects of *Educational Psychology* (Century, 1927). The experimental manual by L. W. Kline and F. L. Kline is highly illustrated: *Psychology by Experiment* (Ginn, 1927). A. T. Poffenberger has greatly enlarged and amplified the *Applied Psychology* which he wrote originally in collaboration with H. L. Hollingworth (Appleton, 1927).

Biological Viewpoint.—Psychology from a biological point of view continues to develop its field of investigation. The *Behavioristic* study of animal response has become affected by the principles of the *Gestalt* school as is seen in R. M. Yerkes' new study of "The Mind of a Gorilla" (*Genetic Psych. Monog.*, Nos. 1, 2, 1927) and in H. Helson's experiment on "Insight in the White Rat" (*Jour. Exp. Psych.*, Dec., 1927). The Russian school of the "conditioned reflex" has been fully described in English for the first time in the translation of I. P. Pavlov's *Conditioned Reflexes* (Amer. Branch Oxford Press, 1927). H. S. Langfeld has given a concise and thoughtful statement of the "motor theory of consciousness" in terms of new evidence drawn from the *Gestalt* psychology and from new physiological work on bodily posture and tonus: "Consciousness and Motor Response" (*Psych. Rev.*, Jan., 1927). *Structural* psychology and *Capacity* psychology were linked together in H. L. Hollingworth's presidential address before the American Psychological Association on the "*Sensuous*

Determinants of Psychological Attitude" (Dec., 1927).

New Lines.—J. Jastrow has outlined the rapid development which is occurring along several new psychological lines, and he has described "The Reconstruction in Psychology" which is resulting (*Psych. Rev.*, May, 1927). K. Dunlap, discussing "The Use and Abuse of Abstractions in Psychology" claimed that the terms "mind" and "consciousness" have a certain value when kept as abstractions (*Phil. Rev.*, Sept., 1927). L. Carmichael has made another excellent "Contribution to the History of Physiological Psychology" in his study of "Robert Whytt" (*Psych. Rev.*, July, 1927). Tinker, Thuma and Farnsworth have obtained a "Rating of Psychologists" from the results of a questionnaire and they find that those who are judged first in the order of importance are James, Wundt, Binet, Helmholtz, etc. (*Amer. Jour. Psych.*, July, 1927). M. W. Calkins again has come to the defense of *Self* psychology in an article on "Self-Awareness and Meaning" (*ibid.*, July, 1927). D. B. Leary popularizes on the normal and abnormal phases of *That Mind of Yours* (Lippincott, 1927). An unstable popularized attempt to discuss *The Religion Called Behaviorism* has been made by L. Berman (Boni & Liveright, 1927).

EXPERIMENTAL

Psychophysics.—In the field of psychophysics, F. M. Urban has defended "The Accuracy of the Method of Constant Stimuli" (*Amer. Jour. Psych.*, April, 1927). E. Culler has continued his studies in psychometric theory by reevaluating the "Probable Error of the Limen" (*Jour. Exp. Psych.*, Dec., 1927). S. M. Newhall has found by a careful statistical analysis of "Linear Interpolation vs. the Constant Process" that the number of stimuli necessary for determining a limen may be reduced to two or three (*Amer. Jour. Psych.*, July, 1927). H. Carr has emphasized the factor of attitude in his "Interpretation of the Weber-Fechner Law" (*Psych. Rev.*, July, 1927).

Sensory Psychology.—In the field of sensory psychology, K. S. Gibson and F. K. Harris have tested "The Lovibond Color System" (*Science Papers, Bur. Standards*, No. 547, 1927). S. M. Newhall and R. Dodge have elicited "Colored After-Images from Unperceived Weak Chromatic Stimulation" (*Jour. Exp. Psych.*, Feb., 1927). C. E. Ferree and G. Rand have continued their technical work in vision by describing "An Apparatus for Acuity, for Mixing Colored Lights and for Testing the Light and Color Senses" (*ibid.*, June, 1927). D. B. Judd has established definite conditions in his "Quantitative Investigation of the Purkinje After-Image" for the arousal of the secondary positive after-image, and he assumes that some retinal structure close to the light-sensitive layer gives off physical light (*Amer. Jour. Psych.*, Oct., 1927). In a "Note on the Binaural Beat," W. L. Valentine has stated that the fluctuating tone almost never shifted about the head according to his observers (*Jour. Comp. Psych.*, Oct., 1927).

F. A. Pattie, in his careful "Experimental Study of Fatigue in the Auditory Mechanism," has presented very reliable evidence that a general auditory fatigue comes from the prolonged stimulation of one given pitch (*Amer. Jour. Psych.*, Jan., 1927). H. M. Halverson has determined "The Upper Limit of Auditory Localization" (*ibid.*, Jan., 1927). In an "Investigation of Olfactory Qualities" F. L. Dimmick has presented further evidence for doubting Henning's classification (*Psych. Rev.*, Sept., 1927). Definite relations between the pleasantness and the unpleasantness of odors and of olfactory associations have been established by J. H. Kenneth in his "Experimental Study of Affects and Associations Due to Certain Odors" (*Psych. Rev. Monog.*, No. 2, 1927). H. G. Bishop has described "An Improved Heat Grill" (*Amer. Jour. Psych.*, Oct., 1927), and N. C. Burnett and K. M. Dallenbach have made a new analysis of "The Experience of Heat" (*ibid.*, July, 1927). M. A. Tinker has given a long review on the relation of "Legibility and Eye Movement in

Reading" (*Psych. Bul.*, Nov., 1927). E. Shen has made an elaborate "Analysis of Eye Movements in the Reading of Chinese" (*Jour. Exp. Psych.*, April, 1927).

Perception.—In the field of perception, J. H. Parsons has presented a miscellaneous assortment of descriptions regarding visual perceptions together with an adaptation for the field of vision of Head's hypothesis of protopathic and epicritic sensibility: *An Introduction to the Theory of Perception* (Macmillan, 1927). E. G. Wever has made an elaborate analysis of Rubin's distinction between figure and ground, and has determined the time in which this distinction arises: "Figure and Ground in the Visual Perception of Form" (*Amer. Jour. Psych.*, April, 1927). H. R. Crosland, H. R. Taylor and S. J. Newson have shown a significant relation between "Intelligence and Susceptibility to the Müller-Lyer Illusion" (*Jour. Exp. Psych.*, Feb., 1927).

R. F. McConnell found a preference for initial overlap in the arousal of "Visual Movement under Simultaneous Excitations with Initial and Terminal Overlap" (*ibid.*, June, 1927). W. S. Hulin has shown in his "Experimental Study of Apparent Tactual Movement" that the illusion of movement on the skin with successive stationary stimuli is due to a complex perceptual process (*ibid.*, Aug., 1927). The brighter of two lights seems the more motile in "The Perception of Relative Visual Motion" according to E. Thelin (*ibid.*, Aug., 1927). A. H. Sullivan has found that "Perceptions of Softness and Hardness" do not necessarily include lateral movements along the skin (*ibid.*, Dec., 1927). From a clinical viewpoint W. Malamud has discussed "The Role Played by the Cutaneous Senses in Spatial Perceptions" (*Jour. Nerv. & Ment. Diseases*, Dec., 1927). J. P. Guilford has found that the "Fluctuations of Attention" with weak stimuli agree with the phigamma hypothesis (*Amer. Jour. Psych.*, Dec., 1927).

Emotions.—P. T. Young, in his "Studies on Affective Psychology," found that pleasantness and unpleasantness are still described in a wide

variety of forms and that their ultimate character has not yet been determined (*ibid.*, April, 1927). "Primary Emotions" in terms of stimulus and response have been described by W. M. Marston (*Psych. Rev.*, Sept., 1927). J. R. Oliver has made a thorough study of *Fear* (Macmillan, 1927).

Learning.—In the field of learning, a positive "Effect of Type of Training upon Transfer" in memory tests was shown by H. Woodrow (*Jour. Educ. Psych.*, March, 1927). E. L. Thorndike has presented new arguments for "The Influence of Primacy" (*Jour. Exp. Psych.*, Feb., 1927), but J. G. Jenkins and K. M. Dallenbach have declared that Thorndike's results deny this: "The Effect of Primacy upon Recall" (*Amer. Jour. Psych.*, April, 1927). C. W. Manzer has found in "An Experimental Investigation of Rest Pauses" that their effect is greatest between successive periods of work in a series (*Archives of Psychol.*, No. 90, 1927). N. J. Perkins has shown that maze learning in humans is a positive process of selecting the correct path rather than a negative process of avoiding the false paths: "Human Reactions in a Maze of Fixed Orientation" (*Comp. Psych. Monog.*, No. 21, 1927).

Physiology.—In the field of physiology, C. U. Ariens Kappers has found that "The Relation of the Cerebellum Weight to the Total Brain Weight in Human Races and in Some Animals" depends upon the motility of the individual (*Jour. Nerv. & Ment. Diseases*, Feb. 1927). R. Dodge has brought together a collection of his careful studies of the behavioristic and physiological factors in *The Elementary Conditions of Human Variability* (Columbia Univ. Press, 1927). R. Dodge and E. A. Bott have extended the hypothesis of refractory phase inhibition in explaining reciprocal innervation (*Psych. Rev.*, July, 1927).

C. W. Darrow has measured "Sensory, Secretory and Electrical Changes in the Skin Following Bodily Excitation" (*Jour. Exp. Psych.*, June, 1927). L. H. Burnside has made motion picture records of "The

Locomotion of Infants" showing the beginnings of synchronized movements (*Genetic Psych. Monog.*, No. 5, 1927), and M. Sherman has made motion picture records for "The Differentiation of Emotional Response in Infants" (*Jour. Comp. Psych.*, Oct., 1927). H. S. Forbes and H. B. Forbes have found good evidence for considering that the human fetus can respond with sudden movements to a loud external sound four or five weeks before birth: "Fetal Sense Reaction: Hearing" (*ibid.*, Oct., 1927).

ABNORMAL AND SOCIAL

Texts and Publications.—E. S. Conklin has prepared a well organized text called *Principles of Abnormal Psychology* (Holt, 1927). J. E. W. Wallin has produced a manual called *Clinical and Abnormal Psychology* (Houghton, Mifflin, 1927). F. H. Allport has suggested a system of "Self Evaluation" (*Ment. Hygiene*, July, 1927). A. F. Ferraro and T. C. C. Fong have described the new "Malaria Treatment of General Paresis" (*Jour. Nerv. & Mental Diseases*, March, 1927). W. A. White has suggested "The Narrowing of the Gap between the Functional and the Organic" types of insanities (*Amer. Jour. Psychiat.*, Sept., 1927). A. S. Neill makes a Freudian treatment of *The Problem Child* (McBride, 1927). M. F. Meyer has a new book: *When the Other-One Astonishes Us* (Lucas, 1927).

The symposium held at Clark University on spiritualism is published as *The Case For and Against Psychological Belief* (Clark Univ., Publ., 1927). W. N. East has written an *Introduction to Forensic Psychiatry in the Criminal Courts* (Wood, 1927). C. A. Elwood has outlined the evolution of *Cultural Anthropology* (Century, 1927). J. W. Sprowls has severely criticized sociological literature in his *Social Psychology Interpreted* (Williams and Wilkins, 1927). In his *Source Book for Social Psychology* K. Young has collected excerpts from 229 sources on social behavior (Knopf, 1927). T. Burrow has built up a *Social Basis of Consciousness* from psychoanalysis (Harcourt, Brace, 1927). N. Angell's

book, *The Public Mind*, deals with concrete situations (Dutton, 1927). E. A. Doll has suggested "Some Principles of Corrective Treatment" in vocational guidance (*Jour. of Crim. Law and Criminology*, Aug., 1927). S. C. Kohs has written a commentary upon "What Science Has Taught Us Regarding the Criminal" (*Jour. Delinquency*, Sept., 1927).

ANIMAL

R. M. Yerkes and M. S. Child have reviewed the literature on "Anthropoid Behavior" (*Quart. Rev. of Biol.*, March, 1927). Another summary of "Reflexes in Apes" is given by G. Aronovitch (*Jour. Nerves & Ment. Dis.*, May, 1927). C. J. Warden has written an excellent *Short Outline of Comparative Psychology* (Norton, 1927). H. S. Jennings has stated that "Health Progress and Race Progress" depend upon the immediate environment (*Jour. of Heredity*, June, 1927). H. Carr has criticized the mystical term, "insight": "The Interpretation of Animal Mind" (*Psych. Rev.*, March, 1927). H. G. Wyatt has reviewed "The Recent Anti-Instinctivistic Attitude in Social Psychology" (*ibid.*, March, 1927). A. M. Reese has shown that snakes are capable of "Reactions to Light and Touch" (*Jour. Comp. Psych.*, June, 1927). F. R. Lillie has continued his analysis of "The Gene and the Ontogenetic Process" (*Science*, No. 66, Oct., 1927).

EDUCATIONAL AND APPLIED

A very comprehensive *Manual of Individual Mental Tests and Testing* has been compiled by A. F. Bronner, W. Healy, G. M. & M. E. Shimberg (Little, Brown, 1927). H. L. Hollingworth's new book deals with *Mental Growth and Decline* (Appleton, 1927). D. Starch has published a new edition of his *Educational Psychology* (Macmillan, 1927). H. C. Lehman and P. A. Witty have developed some new ideas about *The Psychology of Play Activities* (Barnes, 1927). E. A. Lincoln has brought together the results of an elaborate statistical study upon the *Sex Differences in School Children* (Warwick & York, 1927). A. I. Gates

has described his researches upon *The Improvement in Reading* (Macmillan, 1927). W. F. Bok has written a helpful volume on *How to Succeed in College* (Warwick & York, 1927).

H. Allen, of the *Hoi Bibliologoi* Society has compiled a list of 226 books published in 1927 for teachers and students of education: "A Review of Better Books" (*Educ. Rev.*, Dec., 1927). The results from "Applications of Clinical Psychology in Hawaii" have been summarized by M. E. Babcock (*Univ. of Hawaii Res. Publ.*, No. 1, 1927). According to T. A. Garth's Comparison of Mental Abilities of Nomadic and Sedentary Indians on a Basis of Education" the nomadic are superior (*Amer. Anthropol.*, Sept., 1927). D. A. Robertson has described the personnel project

which is being sponsored by the American Council of Education: "A Cooperative Experiment in Personnel Procedure" (*School & Soc.*, March, 1927).

G. B. Watson has contributed "A Supplementary Review of Measures of Personality Traits" which brings up-to-date a similar review previously published by Symonds (*Jour. Educ. Psych.*, Feb., 1927). H. A. Bruce has written about *Your Growing Child* (Funk & Wagnalls, 1927), and E. J. Swift has written about *The Psychology of Youth* (Scribner's, 1927). H. K. Nixon, in "A Study of Perception of Advertisements," found that it takes about seven-tenths of a second to distinguish an advertisement from the other reading material on a magazine page (*Jour. Applied Psych.*, April, 1927).

SOCIOLOGY

BY FRANK H. HANKINS

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CULTURAL VIEWPOINT

By all odds the outstanding feature of the present trend in sociological thought is the increased emphasis upon the cultural medium as a factor in the further evolution of culture. This viewpoint has recently spread from sociology to anthropology, though it has also important sociological antecedents in the writings of Sumner, Durkheim and others. Attention has by no means been centered upon the evolution of different phases of culture, though these have not been neglected, but has rested also upon the spread of culture, the relation of race to cultural achievement, the development of personality in terms of the cultural environment, the conflicts of cultural norms resulting from migration and racial contacts, and the subjective psychological conflicts due to changing mores and to change of individuals from one cultural medium to another.

Three little books discussing principles involved in cultural evolution were: *The Diffusion of Culture*, by

G. Elliott Smith (N. Y., Knopf); *The Diffusion Controversy*, by G. Elliott Smith, Bronislaw Malinowski, Herbert J. Spinden and Alexander Coldenweiser (N. Y., Norton); and *The Diffusion of Culture*, by R. R. Marett (Cambridge University Press). A new work by Professor Roland B. Dixon of Harvard, entitled *Building of Cultures* (N. Y., Scribner's), was announced. An extremely valuable study of the problem of race in relation to culture was *The Clash of Culture and the Contact of Races*, by G. H. L. Pitt Rivers (London, Routledge). Here also should be mentioned the very valuable contribution of Griffin Taylor, *Environment and Race* (Oxford Univ. Press). A convenient survey of the development of various aspects of social life was made by Charles A. Ellwood in *Cultural Evolution: A Study of Social Origins and Development* (N. Y., Century). Professor Robert M. Lowie enriched the study of social origins by *The Origin of the State* (N. Y., Harcourt, Brace). An extremely valuable contribution to both

the psychology and the cultural history of the family, with an extended critique of Freud's anthropological theorizing, was contained in *Sex and Repression in Savage Society* by Bronislaw Malinowski (N. Y., Harcourt, Brace). Another important work by the same author, *Crime and Custom in Savage Society* (N. Y., Harcourt, Brace) throws a flood of light on the basis of law and order at lower levels of cultural evolution. Among popular works on pre-historic culture were: *Primitive Hearths in the Pyrenees*, by Ruth Sawtell and Ida Treat; and a series under the general title *The Corridors of Time*, by H. J. Fleure and Harold Paake. A work of great interest to cultural historians and representative of the current enthusiasm for folk-songs and folk-dances was Carl Sandburg's *American Songbag* (N. Y., Harcourt, Brace).

FAMILY AND POPULATION

During the year the problems centering around the family received an unusual amount of discussion. In addition to an extensive conference at Buffalo in the fall, which on the whole was reassuring as to the permanency and solidity of the monogamous institution, there was a universal interest in certain newer forms of marital union, especially that advocated in *The Companionate Marriage* by Judge Ben Lindsay and Wainwright Evans (N. Y., Boni & Liveright); also in birth control and problems of population quality and increase. Among other books in this field may be mentioned the following: *The Mothers*, by Robert Briffault (3 vols., N. Y., Macmillan); *Social Problems of the Family*, by E. R. Groves (Phila., Lippincott); *Wholesome Marriage*, by E. R. and G. H. Groves (Boston, Houghton, Mifflin); *Sex Education: A Symposium for Educators*, by the U. S. Public Health Service (Washington, D. C.); *Love and Morality*, by Jacques Fischer (N. Y., Knopf); *The Right to be Happy*, by Mrs. Bertrand Russell (N. Y., Harpers); *Standing Room Only*, by E. A. Ross (N. Y., Century); *Family Disorganization*, by E. R. Mowrer (Univ. of Chicago Press); *American Mar-*

riage Records Before 1699, by W. M. Clemens (N. Y., Dutton); *The Heritage of Women*, by Alice M. Winter (N. Y., Minton, Balch).

SOCIAL ADJUSTMENT

While there was a considerably lessened interest in the problems of social pathology in the traditional sense of mass studies of vice, crime and delinquency, there was a definite increase in literary output relating to the evolution of personality and its modification by the social milieu. The older problem of the relative importance of original endowment as over against cultural acquisition in the development of personality fell into the background, preference being given to the study of the psychological conflicts which destroy or reduce personality integration and result in social inefficiency and defect. The most important general work in this field was Robert C. Dexter's *Social Adjustment* (N. Y., Knopf). Among other important volumes were: *Public Welfare Administration in the United States*, by Sophonisba Breckenridge (Univ. of Chicago Press); *The Goal of Social Work*, by Richard C. Cabot (N. Y., Houghton, Mifflin); *Social Work Publicity*, by C. C. Stillman (N. Y., Century); *The Idea of Social Justice*, by C. W. Pipkin (N. Y., Macmillan); *The Co-operative Movement in Social Work*, by W. J. Norton (N. Y., Macmillan); *The Gang*, by F. M. Thrasher (Univ. of Chicago Press); *Clinics, Hospitals and Health Centers*, by M. M. Davis (N. Y., Harpers). A thorough history of the various phases of the evolution of theory and practice in the treatment of criminals in an important American commonwealth was given by Harry E. Barnes in *The Evolution of Penology in Pennsylvania* (Indianapolis, Bobbs-Merrill).

THE NEGRO

The year was notable for the sustained interest among various groups of scientists, psychologists, anthropologists and sociologists, in the intellectual and cultural attainments of the Negro. In certain quarters there is some indication of emotional attitudes suggestive of a Negro cult.

A few of the works appearing in 1927 were: *The Negro in American History*, by Carter C. Woodson (Washington, D. C., Associated Publications); *Negro Labor in the United States*, by C. H. Wesley (Vanguard Press); *The American Race Problem*, by E. B. Reuter (Crowell); *The Negro in American Life*, by Jerome Dowd (N. Y., Century); *Religious Folk-Songs of the Negro*, edited by R. N. Dett (Hampton Institute Press). There are many signs of a new and fresh awareness of the Negro as a factor in American life and of awakened interest in his cultural possibilities, an awareness which is balanced on the side of the Negro by an increased consciousness of racial solidarity and the awakening of race pride.

OTHER PROBLEMS

Less attention than usual seems to have been given during 1927 to such social institutions as church, school, courts, housing and social agencies, though none of these was neglected. In like manner, problems of methods (statistics, survey, and case) were less conspicuous than questions of social process or problems of a partly philosophical character such as constitute the border line between sociology on the one hand and philosophy, ethics and politics on the other.

MATERIALS

General Treatises.—The year was notable for the publication of the long expected systematic treatise, *The Science of Society* (4 vols., New Haven, Yale Univ. Press), representing some fifteen years' work by Professor Albert G. Keller in systematizing and elaborating notes left by Professor William Graham Sumner. The fourth volume, 1331 finely printed pages, had the assistance of Professor M. R. Davie. This ambitious undertaking represents the most elaborate and painstaking description of domestic, religious, and political institutions yet produced in this country. It is distinctly Spencerian and Sumnerian in manner, substance and arrangement. In the textbook field the most notable contribution was *An Introduction to Sociology*, by Jerome

Davis, H. E. Barnes, L. L. Bernard, Seba Eldridge, F. H. Hankins, Ellsworth Huntington and M. M. Willey (N. Y., Heath). A volume of *Readings in Sociology* was issued to accompany the text. Some other works that should be mentioned in this connection were: *The Social Sciences and their Inter-relations*, edited by Ogburn and Goldenweiser, with over thirty collaborators (Boston, Houghton Mifflin); *Recent Developments in the Social Sciences*, edited by E. C. Hayes, with seven collaborators (Phila., Lippincott); *Social Progress* by U. G. Weatherly (Phila., Lippincott); *An Introduction to Sociology* by W. D. Wallis (N. Y., Knopf); *Foundations of Social Life* by H. P. Fairchild (N. Y., Wiley); *Man's Quest for Social Guidance* by H. W. Odum (N. Y., Holt); *The Science of Social Relations* by Hornell Hart (N. Y., Holt); *American Masters of Social Science*, edited by H. W. Odum (N. Y., Holt).

The periodical publications in sociology were enriched by the appearance of *The Journal of Educational Sociology*, issued from New York University, and *The Social Service Review*, issued from the University of Chicago. The Bureau of Agricultural Economics of the U. S. Department of Agriculture began the issue in mimeographed form of a quarterly journal of rural sociological research entitled *Farm Population and Rural Life Activities*. At Dartmouth College, Professors M. M. Willey and M. De Grange established The Sociological Press for the reprinting of important articles and translations.

ORGANIZATIONS

American Sociological Society.—This society which now numbers over 1100 members held its twenty-first annual meeting at St. Louis, December 28-31, 1926. The program, organized under the direction of President John L. Gillen of the University of Wisconsin, included a total of twenty-eight papers. The divisions represented on the program were as follows: Historical Sociology, Social Psychology, Social Biology, Human Ecology, Social Research Projects, and Methods of Research. In addi-

tion, there were Sectional meetings devoted to Rural Sociology, Educational Sociology, The Family, Community Organization, Sociology of Religion, Sociology and Social Work. The Society has three representatives on the Social Science Research Council, and is represented on the joint committee on the publication, in ten volumes, of the projected American Encyclopedia of the Social Sciences, of which Professor E. R. A. Seligman of Columbia is chairman. It is participating in the preparation of the Dictionary of American Biography, under the editorship of Professor Allen Johnson. Its officers for 1927 were Professor W. I. Thomas, President, and Professor W. F. Ogburn, first Vice-President. The 1927 sessions were held at Washington, D. C., on the last days of December, the general subject being, "The Relation of the Individual to the Group."

Social Science Research Council.—This is a body composed of twenty-one representatives of the seven national learned societies in the fields of Economics, Political Science, Sociology, Statistics, Psychology, Anthropology and History. Professor Charles E. Merriam of the University of Chicago is general chairman. The objects of the Council are to correlate researches in the social sciences so as to avoid needless duplication; to stimulate research, especially along new lines and by means of the most scientific methods; and to aid those engaged in special research projects. Besides its Executive Committee it has committees on Problems and Policy, Fellowships, Scientific Method, Scientific Aspects of Human Migration, Social Science Abstracts, Annual Publication of an Index, and Digestion of State Legislation. The Committee on Problems and Policy has organized ten advisory committees as follows: Corporate Relations, Crime, Cultural Areas, Grants-in-Aid, Industrial Relations, International Relations, Inter-Racial Relations, Pioneer Belts, Social and Economic Research in Agriculture, Personality Traits and Community Factors in Juvenile Delinquency, and Preliminary Survey of Crime and Criminal Justice. Each of these

committees has mapped out a number of special projects. The total budget for the years 1927-28 was set at about \$830,000.

Rural Sociology.—The First Conference on Research Methods in Rural Sociology was held at Purdue University, April 4-9, under the chairmanship of Professor G. I. Christy of Purdue University. The aim of the Conference was to promote the realization of the possibilities offered by that section of the Purnell Act of Congress which states that "the funds shall be applied to necessary expenses of such sociological investigations as have for their purpose the development and improvement of the rural home and rural life." Thirty-six delegates were present from thirty institutions. Committees were appointed on the following subjects: Standards of Living, The Sociology of Rural Groups, Composition and Change of Population, Young People's Organizations, Rural Psychological Attitudes, The Farm and Village Family, and The Physical Background of Country Life.

National Social Science Fraternities.—About ten years ago there was a movement in the Middle West for the formation of fraternities to include students and professors engaged in the various social sciences. The idea was that such groups would bring together for periodical meetings, with papers and discussion, scholars in related fields. They would thus serve to stimulate advanced work in the social sciences and to keep the specialists of one field informed of advances in related subjects. Several such groups were organized, at least two promoted by sociologists and one by economists. In 1926 Alpha Pi Zeta was incorporated as a national honorary fraternity on lines similar to Sigma Xi, long existent for students in the more exact sciences. On December 29, 1926, Professor F. S. Deibler of Northwestern University was elected President. At the same time Professor John R. Commons, representing the Order of Artus, a similar fraternity for economists, signified the willingness of that society to merge with A. P. Z.

National Council for Social Studies.—This held its seventh annual meeting at Dallas, Texas, February 26, 1927. It is composed of 1650 teachers, mostly from high schools, interested in the extension of the teaching of the various social sciences in secondary schools, and in the better preparation of teachers therefor. Heretofore the various social sciences have been lumped together rather indiscriminately under the headings of History or History and Civics. In recent years there has been a rapid separation of special courses in Economics and Sociology, together with a considerable output of new textbooks distinctly designed for secondary school work in sociology.

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ANTHROPOLOGY AND ETHNOLOGY

BY CLARK WISSLER AND OTHERS

AMERICAN MUSEUM OF NATURAL HISTORY

PHYSICAL ANTHROPOLOGY

New Views of Man's Origin.—The year in physical anthropology brought in a new view as to the relation of man to other primate forms. Prof. Henry Fairfield Osborn, President of the American Museum of Natural History in New York, finds difficulty in harmonizing man's structure and function with the prevailing theory that he descended directly from an ape-like ancestor, and proposes that man branched off from the primate stem millions instead of thousands of years ago. He believes, further, that the ancestors of man are still to be found and ultimately will be found in much earlier formations than heretofore anticipated. In his new book, *Man Rises to Parnassus*, this distinguished scientist has sketched the unfolding of the spiritual life of man, instead of dwelling in detail upon a comparison of his bones with those of lower forms.

These new views respecting man's origin have not met with the approval of other authorities in this field. First, Sir Arthur Keith, the most eminent English authority, has marshalled evidence to support the older view that man's relation to the higher primates is direct and immediate. He will not accept the moderate idea that both apes and men

represent parallel lines of relationship, derived from a remote ancestor, but insists that the origin of man was relatively recent. In America, Professor William K. Gregory, the distinguished comparative anatomist, a colleague of Professor Osborn's in the American Museum of Natural History, denies the validity of Osborn's assumptions, though is perhaps unwilling to go so far as Professor Keith. In the main, American biologists are supporting Gregory in his opposition to the new views of Osborn.

Late in the year, the Royal Anthropological Institute of Great Britain and Ireland, conferred the Huxley Memorial Medal on Dr. Ales Hrdlicka, anthropologist in the Smithsonian Institution. In his address on that occasion, Dr. Hrdlicka sponsored the view that Neanderthal Man was the immediate ancestor of modern man. Because we find in Neanderthal Man marked anatomical peculiarities, it has been the custom to assume that he represents a divergent side-line of humanity, which became extinct in the cave period. Dr. Hrdlicka denies the validity of this assumption, claiming that traces of this type are to be observed in the world today and that no other forms of early man are known from

which modern man could have descended. It is thus, apparently, that the year 1927 closed with the crystallization among the greatest biological authorities, and we may expect, in consequence, a critical re-examination of the data of antagonistic theories of man's origin.

HISTORICAL AND RACIAL RESEARCH

Egypt.—Those interested in medical problems are taking more and more interest in the opportunities anthropology offers for historical and racial research. German investigators have made autopsies upon many thousand Egyptian mummies representing all periods of Egyptian history, the results throwing new light upon the history of disease. For one, syphilis was absent, which supports the older view that this disease originated in the New World before the time of Columbus. On the other hand, the claim is made that tuberculosis was present. The popular notion that increase in civilization results in deterioration of the teeth was in part borne out by the Egyptian data, since the number of defective teeth increased from dynasty to dynasty.

North America.—The antiquity of man seems to be taking on new life. Early in the year, Prof. Henry Fairfield Osborn announced the discovery, in Nebraska, of primitive implements made from the bones of extinct horses, fully fossilized. They were, however, crude in form and showed no signs of use. Archaeologists in general have refused to accept them as true artifacts and so reject them as evidences of antiquity. On the other hand, new finds of chipped stone points associated with the bones of extinct bison have been brought to public attention by John D.iggins, Director of the Denver Museum, the find being in northeastern New Mexico. These new finds have been examined by palaeontologists, as well as archaeologists, and the direct association of extinct bison bones and stone implements is conceded. This puts man in America back to the beginning of the Pleistocene, an age not yet conceded by the majority of American scholars.

Africa.—For Europe and Asia no important new discoveries have been reported, but a British expedition to Africa announces that some curious non-negroid remains were found in Uganda. These were associated with unusual artifacts, apparently pertaining to a neolithic culture, so far unobserved in Africa.

ETHNOLOGY

Field Work.—In the study of living tribes there are no outstanding results to report. This is due, in part, to the status of exploration, it being doubtful if a single important tribe anywhere has escaped observation and description, even in the most inaccessible jungles. In any case, no new peoples were discovered during the year, so our task resolves itself into a record of prosaic progress in the amassing of new knowledge concerning known peoples. Thus, in far-away Australia, special funds have been raised and a staff of field-workers enlisted for a thorough study of the surviving aborigines—"blacks," they are called—and for work in what was formerly German New Guinea, several expeditions having gone out from Adelaide and Sydney. The Bishop Museum, in Honolulu, has taken up field-work in India, Micronesia, and special studies in Samoa, Cook Islands, and Tahiti. This institution has also published during the year a number of special Polynesian studies. In Africa local British and French students have made additions to existing data. Mention may also be made of the Harvard University expeditions to North Africa, the Riff, and similar areas, and finally the return of Ralph Linton of the Field Museum of Chicago, from Madagascar, where two years were spent in an intensive study of the native population.

Russian ethnologists have given some attention to the tribes of Siberia and Waldemar Jochelson, the most distinguished Russian ethnologist and now in the United States, has just completed a volume surveying the primitive peoples of Asiatic Russia, to be published in English.

Expeditions.—Ethnologists of the United States and Canada have made

some progress in rounding out previous investigations. Of special interest are expeditions to the Arctic, carrying each at least one ethnologist; the Rawson-Macmillan Arctic Expedition of the Field Museum for study of the Eskimo in Labrador; the Putnam Expedition to Hudson Bay, giving opportunity to visit Eskimos in that locality; and the Smithsonian party to Alaska. The great center of activity in North America seems to be the Pueblo, or village Indians of New Mexico and Arizona, the most studied of Indian tribes; in 1927 there were at least eight field-workers out, their objectives ranging from music to art, language, religion and material life. Obviously, a few more years of such concentration of research will give us fairly complete information as to how these interesting natives live.

Indian Languages.—The most distinctive advance for the year, however, was a grant by the council of Learned Societies for the study of Indian Languages, to be supervised by a committee of specialists, headed by Prof. Franz Boas. The recording of several tribal languages was undertaken during the summer, and it is expected that within a few years all the as yet unrecorded languages will have been covered.

Educational Progress.—Perhaps the most significant development in ethnology is the deep interest taken in the subject by students of the social sciences and the efforts of social science faculties to provide for instruction in universities. That this is a real movement is evidenced in the establishment of new professorships and instructorships in a number of important institutions, as the University of Oklahoma, Fiske University, Northwestern University, and additions to the teaching staff in Chicago University.

Social Science Affiliations.—Ethnologists have become active in the Social Science Research Council, an organization national in scope and devoted to the promotion of research of a high order. The stimulation and aid ethnologists are receiving from the Social Science Council promises a new era in the study of primi-

tive peoples and a clearer understanding of society as a whole. Steps have also been taken to provide an abstract service in the social sciences, to include ethnology, a service that will greatly facilitate comparative studies in primitive culture.

General Progress.—Turning to a general estimate for the year, it can be said that progress has been made. It cannot be said, however, that outstanding contributions have been made, nor has any publication appeared that can take rank as giving new insights or leads in the study of primitive cultures. No new methods of research have been proposed.

ARCHAEOLOGY

Extinct Peoples and Cultures.—Anthropology gives especial attention to extinct peoples and cultures. It is usual to distinguish between the prehistory of Rome, Greece, and other Mediterranean countries and the archaeology of anthropology. The former has an intimate relation to history and is interpreted in the light of historical data. On the other hand, there is little in the way of true history for other parts of the earth, so anthropology deals with the extinct cultures found therein from the standpoint of its knowledge of living peoples.

Western Europe.—The best known investigations are those in western Europe, dealing with early man. For the cave period, no important discoveries have been reported, the new finds adding little to existing knowledge. However, in France, some curious tablets and pottery had been discovered in a cultivated field, now spoken of as the Glozel tablets. These were assumed to belong to the old stone age and because they exhibited a kind of writing, something not known at so early a period, were suspected of being frauds. Consequently a committee was appointed to look into the matter and after an exhaustive study of the objects and the site where found, the committee reported them as spurious. As in most cases of this kind, there is still a strong minority believing in their authenticity. Turning to the later neolithic stage and the introduction

MENTAL TESTS AND MEASUREMENTS

of iron, an important find was made by Swedish archaeologists on the Island of Gotham, where stood a mediæval town engaged in the distribution of iron.

Asia.—During the year the Russian archaeologist, Peter Kozloff, reported on his explorations in mediæval Mongolia, where he studied early Chinese remains and then set out for Tibet to continue these investigations. And while we are concerned with this part of the Old World, it is well to note that John D. Rockefeller, Jr., gave \$2,000,000 for a museum in Jerusalem, thus stimulating archaeological research in Palestine.

The New World.—Archaeologists have been especially active. The richest archaeological sections here are in Mexico, Central America, and the Andean states of the southern continent. The distinguished Mexican archaeologist, Ramon Mena, Mexico City, announced the discovery of the source from which came the jade used by the Aztec and their predecessors. The importance of this lies in that it has up to the present been a mystery. In Yucatan, the Carnegie Institution of Washington continues to excavate a temple in the famous ruined Maya City of Chichen Itza. The chief item of interest is that an older temple was found underneath, upon the walls of which were well-preserved paintings.

Throughout Central America and on down into the Andes, there is one fundamental problem—the relative age of the cultures. The calendars and other time-counting devices left by the Mayas enables one to read the dates on the monuments in Yucatan and if these could be readily translated into our reckoning, the gap

between history and prehistory in the New World could be bridged. The realization of this has been hastened by a special conference of experts at the Carnegie Institution in Washington, since it is now accepted that the dates on Maya monuments can be translated into our time with an accuracy of a year or two, and the year 1927 may be taken as marking the culmination of one major objective of fundamental importance in American research.

In Southwestern United States a number of institutions have worked persistently and systematically to distinguish the successive extinct cultures and the order of their appearance. What is more significant is that these investigators have formed a community of interest and during the year held a conference at Pecos, New Mexico, at which meeting a chronology for the area was formulated as a working basis for the next few years, the consensus of opinion being that this chronology will be found correct and thus established.

In other parts of North America, archaeological research is for the most part carried on by State agencies, as in Ohio, New York, Wisconsin, Iowa, Michigan, Illinois, etc. Eventually, the coordination of these results will give the story of man's career in the New World. And looking to the world at large, it is clear that archaeology is now proceeding by objective and highly empirical methods, to work out the successive stages in man's history. In no far distant future, we may expect that for many parts of the world the extinct cultures will be known and the time order in which they appear be established.

MENTAL TESTS AND MEASUREMENTS

BY GORDON W. ALLPORT

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CRITICISMS

Professional Dicta.—Popular attack on mental measurement has subsided. Indeed, current fads show that the public has to a remarkable degree

accepted the principles and practice of testing for abilities and aptitudes. Within the profession, however, rigid examination is everywhere directed toward the theories and instruments

employed in testing. According to Thorndike's *Measurement of Intelligence*, "the present theory and practice of measurement of mental abilities are justified to a remarkable degree in certain respects, but in others should be almost recreated." The three specific defects in most tests, he finds to be: ambiguity in content, arbitrariness in units; and ambiguity in significance. Thorndike has not only pointed out these weaknesses, but has done much to indicate the method for their elimination.

Older Dogmas.—New results are replacing older beliefs. Murchison finds, for example, that the intelligence of criminals is not uniformly low, but depends upon many factors, such as locality, type of crime, etc. The invariable superiority of Nordic intelligence is now widely questioned; racial types are doubted. Ever more marked is the tendency to regard racial differences (even those between negro and white) as a function of environmental and educational opportunity. Gifted children have through many studies been found to be superior not only in intelligence, but in health, discipline, morality, play, and personality. The more widely tests are used the less significant seem to be the intellectual differences between the sexes. An excellent analysis of this problem is contained in Lincoln's new book, *Sex Differences in School Children* (Balt., Warwick and York).

Improvement in Technique.—Shorter forms of standard tests are available which have a reliability virtually as high as the longer form. A new rapid group test for survey purposes, with an especially easy scoring method, is devised by Pintner (*Teachers' College Record*, vol. 19, no. 1). There have been extensive studies in reliability, the effects of coaching, retesting of groups after intervals of time, and general problems of statistical method. A detailed and technical survey of this progress is to be found in the *Psychological Bulletin*, vol. 24, no. 7.

INTELLIGENCE TESTS

Clinical Manuals.—Two notable manuals for the guidance of clinical

testers have appeared. The first by Bronner and Healy, *A Manual of Individual Mental Tests and Testing* (Boston, Little, Brown), attempts to include every adequately standardized individual test of mental ability. It pleads for the utilization of a broader range of tests to detect all aspects of ability and disability. Too many assumptions have hitherto been made on the slender basis of a single test. The second manual is by F. L. Wells, *Mental Tests in Clinical Practice* (N. Y., World Book Co.). Both volumes assist the examiner in the sane application of those tests which have been tried and found diagnostic. They mark the end of strictly free lance testing. A scale has been devised by Wallin and Gilbert to enable clinics to obtain a knowledge of the educational progress of their patients without undue expenditure of time (*Ped. Sem.*, vol. 34, no. 3).

Registration of Clinical Psychologists.—The American Psychological Association is planning after the present year to certify competent clinical psychologists and psychometricians in an endeavor to raise the standards of practice, and to protect the public. Legal aspects of this certification are under consideration.

Progress in Theory.—Thorndike's belief that by original nature the difference between the highest intellect and the lowest is due only to the quantity of neural connections suggests the possibility for the future of measuring directly in terms of neural richness the magnitude of native ability. Similarly, in discussing "What's the Matter with Psychology and Measurement?" (*Journ. Educ. Res.*, vol. 16, no. 3), McCall believes that present instruments deal too much with information, not directly enough with basic aptitudes, of which he thinks there are four: *intensity of desire*, and *perfection of mechanism*. Studies have shown that the effect of education is to level down intellects which by nature are above the average (Kelley, Wechsler). Practically negative results are reported by many investigators concerning the relation of intelligence to physique, and to the size of family.

MENTAL TESTS AND MEASUREMENTS

EDUCATIONAL TESTS

Wider Use of Tests.—A survey of forty states, conducted by the *American Educational Digest* (vol. 47, no. 2) reveals that 91% of the 2500 superintendents questioned, actively favor standard intelligence tests as criteria for classification or promotion; 85% actually use standard achievement tests to determine the attainments of their pupils. The only subject for which no standard tests are found is agriculture. The commonest achievement test used is the Stanford; and the three commonest intelligence tests are the Terman, Otis, and National. The conclusion of this survey is "that the most significant and important movement in the field of education during the past decade has been the rapid development and constantly increasing use of scientific measures."

College Entrance Board.—More than seven thousand candidates for admission to various colleges were examined in June, 1927, by means of the Scholastic Aptitudes Test. Previous experience has shown that these tests contribute somewhat to the prediction of college grades, particularly during the Freshman year. No college, however, uses them as the sole criterion for admission. They are regarded as especially valuable as guides for work with students after admission. It was found that, though boys were higher in arithmetical ability, and girls in language ability, the average sex differences were negligible.

New Type Examinations.—The objective type of test for measuring accomplishment has gained a very wide popularity. Not only are such tests, which are readily and uniformly scored, used in schools and colleges, but they are now adopted by the U. S. Civil Service, the College of Physicians and Surgeons, the College Entrance Examination Board, and the Board of Examiners for N. Y. Public Schools.

Measurement in Secondary School.—Two comprehensive books on the application of standard devices for scholastic achievement in secondary schools have been issued: *Tests and Measurements in High*

School Instruction by Ruch and Stoddard (N. Y., World Book Co.), and *Measurement in Secondary Education* by Symonds (N. Y., Macmillan). This year has seen the addition of standard scales measuring ability in music, art, and commercial subjects. All of the major subjects have previously been scaled.

Classification of Students.—Sectioning of students according to aptitudes revealed by tests has become popular both in schools and colleges. A thorough study by Miller (*Sch. & Soc.*, vol. 26, no. 656) concludes that "superior pupils at least in technical subjects and probably in all subjects can derive an additional profit of 33% when segregated."

College Personnel Work.—Toops finds that at present tests are used widely in colleges, but less for the purpose of entrance than for administrative guidance. Tests are relied upon for (a) dismissal because of low scholarship, (b) encouraging extra effort in the unmotivated bright student, (c) determining the amount of work a student shall be allowed to carry (*Voc. Guid. Mag.*, vol. 6, no. 27).

VOCATIONAL TESTS

New Books.—Laird's *The Psychology of Selecting Men* (McGraw, Hill) and Swift's *How to Influence Men* (N. Y., Scribner's) have appeared in new and enlarged editions, and contain discussions of tests. The A. W. Shaw Co. (Chicago) has issued Metcalf's *Psychological Foundations of Management* and Hoopingarner's *Business Personality and Its Development*, in two volumes.

New Tests.—Self-diagnosis in respect to personality and business ability is the subject of Hoopingarner's manual (Chicago, Shaw). The *Journal of Personnel Research* has been reorganized under a new name, *The Personnel Journal*, and now is issued bi-monthly. It contains in 1927 new tests for mechanical aptitude, selection of workers for the metal trades, ability in mechanical drawing, and business knowledge. Fryer (*Journ. Appl. Psychol.*, vol. 11, no. 3) has shown that vocational interests of people have no predic-

tive value concerning their abilities. Tests seem to be a better guide.

Industry.—W. V. Bingham, Director of the Personnel Research Federation, N. Y., writing on "Careers in Industrial Psychology" (Washington, Nat. Res. Council) finds very few psychologists in industrial psychology at present. The field is largely one of the future. Mention should be made, however, of important researches in progress in various industries regarding measurement of industrial capacity. The West Lynn plant of the General Electric Co. is prominent in this regard (see *Voc. Guid. Mag.*, vol. 6, no. 2).

PERSONALITY AND CHARACTER

Criticism.—Non-intellectual factors are far less accessible of exact measurement than intellectual. For this reason testing in this field lags behind intelligence and educational testing. More investigators, however, than ever before are working on this subject. Several subsidies have been given to research, notably by the Institute of Social and Religious Research and the National Research Council. The zeal of the numerous investigators should soon reveal to what extent quantitative differentiation between individuals in respect to personality is possible. One of the most urgent needs is for an understanding of the nature of the unit to be measured, viz., the "trait" (see *Psychol. Bull.*, vol. 24, no. 5). The limitations of tests for character are at present frequently pointed out, and the genetic-historical case-study is widely advocated as a supplement to tests.

New Work.—An exceptional bibliography of character and personality containing complete references on the subject of measurement has been prepared by Roback (Cambridge, Sci.-Art Co.). Other summaries appearing in 1927 are by Watson (*Voc. Guid. Mag.*, vol. 5, no. 7), May and Hartshorne (*Psychol. Bull.*, vol. 24, no. 7), Young (*Amer. Journ. Soc.*, vol. 32, no. 6). A continuation of studies of honesty by May and Hartshorne have appeared in *Religious Education*. A non-verbal form of the Downey will-temperament test is of-

fered (*Journ. Appl. Psychol.*, vol. 11, no. 2), and repeated studies of the reliability and validity of these ingenious tests have been made with rather unfavorable results. Woodrow and Bemmels (*Journ. Educ. Psychol.*, vol. 18, p. 239 ff.) find that overstatement is a good indication of general character. A new test for introversion is the subject of research by Miss Faterson of the University of Minnesota. A test for ascendance in personality has been devised by Allport and Allport, and will appear in an early issue of the *Journal of Abnormal and Social Psychology*. Further developments of his test for Social Intelligence are reported by Moss (*Sci. Amer.*, Aug., 1927).

CONCLUSIONS

American Influence Abroad.—The publications for the year contain evidence of America's leadership in the field of testing. Modifications and new standardizations of American tests are reported from Porto Rico, Hawaii, Portugal, Germany, France, England, Switzerland, and elsewhere. Rignano, the Italian biologist, in surveying the progress of mental measurements at the International Congress of Psychology at Groningen, regards America as the leader in "the general Taylorization of all human activities," through psychological testing (cf. *Monist*, vol. 37, no. 3). With many foreign critics, while accepting the ingenious contributions of the testers, he emphasizes the need for well-founded "guiding theories" which American psychologists are frank to admit must be borrowed in part from Europeans.

Saner Testing.—The rapid conversion of industrial and educational authorities to the use of mental tests, and the growing favor with which the public regards measurement are a guarantee of even further extension of testing. At the same time the research of large numbers of psychologists and statisticians regarding the reliability and validity of mental measurements affords the criticism and control necessary to a successful application of tests. The growth of sanity in this field is an outstanding characteristic of the year.

COGNATE SOCIETIES

COGNATE SOCIETIES

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| <p>AMERICAN PSYCHIATRIC ASSOCIATION.
—Albany, New York.</p> <p>AMERICAN PSYCHOPATHOLOGICAL ASSOCIATION. — 520 Commonwealth Ave., Boston, Mass.</p> <p>AMERICAN PHILOSOPHICAL ASSOCIATION.—University of Oregon, Eugene, Oregon.</p> <p>AMERICAN GENETIC ASSOCIATION.—Bureau of Plant Industry, Washington, D. C.</p> <p>AMERICAN PHILOSOPHICAL ASSOCIATION, EASTERN DIVISION.—Columbia University, New York, N. Y.</p> | <p>PSYCHOLOGICAL CORPORATION.—3939 Grand Central Terminal, New York, N. Y.</p> <p>NATIONAL COMMITTEE FOR MENTAL HYGIENE.—370 Seventh Ave., New York, N. Y.</p> <p>AMERICAN SOCIETY FOR PSYCHICAL RESEARCH.—15 Lexington Ave., New York, N. Y.</p> <p>AMERICAN SOCIAL SCIENCE ASSOCIATION.—280 Madison Ave., New York, N. Y.</p> <p>AMERICAN SOCIOLOGICAL SOCIETY.—58th St. and Ellis Ave., Chicago, Ill.</p> |
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PART SEVEN THE HUMANITIES

DIVISION XXV LITERATURE AND LANGUAGE

HISTORY, BIOGRAPHY AND TRAVEL

By A. M. SCHLESINGER

PROFESSOR, HARVARD UNIVERSITY

HISTORIOGRAPHY

Tendencies.—The two marked tendencies in the historiography of the year have been, first, a continuance of the emphasis on American social and intellectual history and, second, a strong revival of interest in American diplomatic history. Published works in the field of foreign history have been conspicuous by their scarcity, though their quality has served somewhat to offset their lack of quantity. In early European history the richly illustrated *History of the Ancient World* (Oxford: Oxford Univ. Press) by M. I. Rostovtseff, a Russian scholar who has cast his fortunes with the American academic world, is a landmark. It is the first of two volumes in which will be treated the history of all civilizations, other than those of India and the Far East, from the fourth millennium B.C. to the fall of the Roman Empire. C. H. Haskins, *The Renaissance of the Twelfth Century* (Cambridge: Harvard Univ. Press), is an invaluable guide to the intellectual life of the times, casting new light on a period whose significance has been generally underestimated. P. W. Slosson, *Twentieth Century Europe* (Boston: Houghton, Mifflin), is an able summary by one of the accomplished younger scholars. In *Karl Marx's Interpretation of His-*

tory (Cambridge: Harvard Univ. Press), M. M. Bober has given a critique of the doctrine of economic determinism.

American *Kulturgeschichte* has been illuminated by many studies both large and small. C. A. and Mary Beard, *The Rise of American Civilization* (2 vols., N. Y.: Macmillan), the first attempt at an historical synthesis from the earliest times to the present, is an epoch-marking, if not an epoch-making, work. An even more ambitious project in the same field is the *History of American Life* (N. Y.: Macmillan) in twelve volumes, edited by A. M. Schlesinger and Dixon Ryan Fox, containing contemporaneous illustrations and a wealth of bibliographical material. Volumes of this set have appeared as follows: T. J. Wertenbaker, *The First Americans, 1607-1690* (II); James Truslow Adams, *Provincial Society, 1690-1763* (III); Carl Russell Fish, *The Rise of the Common Man, 1830-1850* (VI); and Allan Nevins, *The Emergence of Modern America, 1865-1878* (VIII). Two excellent volumes have been added to R. H. Gabriel, ed., *The Pageant of America* (New Haven: Yale Univ. Press), the pictorial history of America in fifteen volumes, of which five volumes were issued last year: F. A. Ogg, *Builders of the Republic* (VIII); and

HISTORY, BIOGRAPHY AND TRAVEL

F. J. Mather, C. R. Morey and W. J. Henderson, *The American Spirit in Art* (XII).

Recent Times.—Two books dealing with the more recent period of American life are: Mark Sullivan, *America Finding Herself* (N. Y.: Scribner's)—a highly readable report of social and economic change to 1905, comprising the second volume of his history of *Our Times*; and Albert Bushnell Hart, ed., *In Our Times* (N. Y.: Macmillan)—the fifth volume of his *Source Readers in American History*, continuing the plan of presenting to children the many-sidedness of American life through brief source extracts. Several concise surveys of American history have appeared, notably T. J. Wertenbaker, *The American People* (N. Y.: Scribner's)—a swift narrative intended particularly for the tired business man; S. E. Morison, *The Oxford History of the United States* (2 vols., Oxford: Oxford Univ. Press)—written primarily for the British public and stressing Anglo-American relations; and Hendrik Van Loon, *America* (N. Y.: Boni)—characterized by jolly flings at hoary traditions.

American intellectual history has been exploited in its various aspects by a number of writers, the most ambitious treatment being V. L. Parrington, *Main Currents in American Thought* (N. Y.: Harcourt) in three volumes, of which two appeared: *The Colonial Mind* (I), and *The Romantic Revolution* (II)—a sweeping and exhilarating interpretation based largely on the more influential American writings. An important contribution to the international movement of ideas is H. M. Jones, *America and French Culture, 1750-1848* (Chapel Hill: Univ. of N. C. Press). The influence of the frontier on American literary culture is the theme of Dorothy A. Dondore, *The Prairie and the Making of Middle America* (Cedar Rapids: Torch Press)—a detailed scholarly account; and of Lucy L. Hazard, *The Frontier in American Literature* (N. Y.: Crowell)—defending the thesis that American literature has followed the frontier, whether rural or industrial, and has

changed with the locale of the frontier.

Culture and Art.—The most important force in popular literary culture is treated in W. G. Bleyer, *Main Currents in the History of American Journalism* (Boston: Houghton Mifflin)—the ablest sketch yet written of editors and newspapers that have left their mark on American journalism since its beginnings in Colonial times. In *The War Myth in United States History* (N. Y.: Vanguard Press), C. H. Hamlin goes far toward establishing the presuppositions of peace lovers. The fine arts have their innings in two works: G. C. D. Odell, *Annals of the New York Stage* (2 vols., N. Y.: Columbia Univ. Press)—based on wide research and constituting the first attempt to give a full history of the New York theater from its humble beginnings to the end of the nineteenth century, to be complete in six volumes; and Samuel Isham and Royal Cortissoz, *History of American Painting* (N. Y.: Macmillan)—a sumptuously illustrated revision by Cortissoz of the standard work by Isham.

Some of the humbler arts, including that of living, are dealt with in Marion N. Rawson, *Candle Days* (N. Y.: Century)—a story of the handicrafts and implements of the candle-burning era; and Elise L. Lathrop, *Early American Inns and Taverns* (N. Y.: McBride)—a veritable *vademecum* of tavern history and tradition, giving some account of more than thirteen hundred hostelryes on the Atlantic seaboard and in the West. Of value to the social historian and the genealogist is W. M. Clemens, comp. and ed., *North and South Carolina Marriage Records* (N. Y.: Dutton), covering the period from earliest Colonial days to the Civil War.

American economic history receives the share of attention it deserves. W. J. Laube, *Industrial Democracy* is a rapid survey to realize in that have in America a more Rich-

Walkers in Early America (Phila.: Lippincott)—a veritable scrapbook of information, gathered from many sources and dealing with methods of distributing wares and ideas in the period down to about 1860; G. F. Dow, *Slave Ships and Slaving* (Salem: Marine Research Society)—an account of the slave trade at different periods, with many illustrations from old prints; and C. H. Wesley, *Negro Labor in the United States, 1850-1925* (N. Y.: Vanguard)—the first scientific study of the subject.

Diplomatic History.—In the field of American diplomatic history the most significant enterprise was S. F. Bemis, ed., *The American Secretaries of State and Their Diplomacy* (N. Y.: Knopf), a cooperative series planned by the late Gaillard Hunt, of which the first three volumes were issued during the year, the individual sketches being written by specialists. Three one-volume surveys of American foreign relations also appeared, all of them of excellent quality: J. H. Latané, *History of American Foreign Policy* (Garden City: Doubleday); L. M. Sears, *History of American Foreign Relations* (N. Y.: Crowell); and J. Q. Dealey, *The Foreign Policies of the United States* (Boston: Ginn)—the last a brief sketch concerned mainly with underlying tendencies. Much new and valuable information is brought to light in the following monographic studies: S. F. Bemis, *Pinckney's Treaty* (Balt.: Johns Hopkins Univ. Press); A. P. Whitaker, *The Spanish-American Frontier* (Boston: Houghton, Mifflin); L. M. Sears, *Jefferson and the Embargo* (Durham: Duke Univ. Press); Dexter Perkins, *The Monroe Doctrine, 1823-1826* (Cambridge: Harvard Univ. Press); and H. C. Hill, *Roosevelt and the Caribbean* (Chicago: Univ. of Chicago).

Other History Aspects.—Many aspects of American history have been investigated, of which only some can be noted: J. H. Latané, *The American Frontier* (Boston: Houghton, Mifflin)—the first history of the American frontier; and H. C. Hill, *Roosevelt and the Caribbean* (Chicago: Univ. of Chicago).

R. G. Adams, *The Gateway to American History* (Boston: Little, Brown)—an impressive pictorial record of exploration and settlement; E. E. Curtis, *The Organization of the British Army in the American Revolution* (New Haven: Yale Univ. Press)—a scholarly exposition of a neglected subject; Agnes C. Laut, *The Conquest of Our Western Empire* (N. Y.: McBride); J. B. McMaster, *History of the People of the United States during Lincoln's Administration* (N. Y.: Appleton)—a continuation of McMaster's comprehensive history written according to his familiar formula; E. C. Kirkland, *The Peacemakers of 1864* (N. Y.: Macmillan)—a revealing study of the attempts to bring about a negotiated peace between the North and the South; and E. M. Coulter, *The Civil War and Readjustment in Kentucky* (Chapel Hill: Univ. of N. C. Press)—an important contribution based upon extensive research.

Various aspects of American participation in the World War have been illuminated by H. T. Allen, *The Rhineland Occupation* (Indianapolis: Bobbs-Merrill)—an account of the occupation by the commander of the American forces; H. A. Toulmin, *The Air Service* (N. Y.: Van Nostrand)—dealing with the Army flying service in France in 1918; Johnson Hagood, *Services of Supply* (Boston: Houghton, Mifflin)—written by the chief of staff; J. N. Rosenberg, *On the Steppes* (N. Y.: Knopf)—a diary describing the experiences in the Crimea in 1921 of the vice-chairman of the American Joint Distribution Committee; and F. A. Golder and Lincoln Hutchinson, *On the Trail of the Russian Famine* (Stanford: Stanford Univ. Press)—an account of conditions in 1921-1923 written by two investigators for the American Relief Administration.

State History.—In the field of State history the largest enterprise was Albert Bushnell Hart, ed., *The Commonwealth History of Massachusetts* (N. Y.: State History Co.), a cooperative undertaking in five volumes, of which the first volume appeared during the year. To the sum total of historical books must be added the

HISTORY, BIOGRAPHY AND TRAVEL

countless articles and reprints of source documents undertaken by national, region, State and local historical societies. A project of particular importance was the appearance of the first volume of *Mississippi Provincial Archives* (Jackson: Dept. of Archives Press), edited by Dunbar Rowland and A. G. Sanders and covering the years 1729-1740.

TRAVEL AND DESCRIPTION

Works of travel and description were not numerous. Among the more notable were: J. T. Faris, *Old Trails and Roads in Penn's Land* (Phila.: Lippincott)—an historical guidebook for the traveler at home; D. B. Macmillan, *Etah and Beyond* (Boston: Houghton, Mifflin)—describing the author's North Greenland expedition of 1923-1924, which marked the beginning of a new epoch in Arctic exploration; W. J. Morden, *Across Asia's Snows and Deserts* (N. Y.: Putnam)—the record of an expedition under the auspices of the American Museum of Natural History which traversed Central Asia by a trail untrod since the days of Marco Polo; and Katherine Mayo, *Mother India* (N. Y.: Harcourt)—a depressing picture of social conditions in India that caused wide controversy on both sides of the Atlantic.

BIOGRAPHY AND AUTOBIOGRAPHY

Biographical Trend.—American biographical writing has apparently at last taken a definite turn away from pseudo-psychoanalytical portraits and scandalmongering reports to thoughtful, well-rounded studies of characters in their settings. There has been, fortunately, no return to sanctified biography; and on the other hand, the books of the year include some works that squint, or leer, at Freud. The recent excursion of biographers into the Dark Continent realm of dynamic psychology has not been without its gains; for it has shown that, where the experts themselves are at odds with each other, mere tyros should hesitate to be cocksure, and it has, further, served to give biographical writing a turn toward greater realism. American statesmen and literati

have been the favorite subjects of the biographers during the year, one of the few foreign studies being L. R. Gottschalk, *Jean Paul Marat* (N. Y.: Greenberg)—a scholarly and sometimes brilliant life of the French revolutionary leader.

Washington.—The approaching bicentenary of the birth of Washington in 1932 is foreshadowed in a number of studies of the first President. All of them repudiate Parson Weems but without rushing to the extreme of embracing Rupert Hughes. Indeed, the second volume of Hughes, *George Washington* (N. Y.: Morrow), which appeared during the year, failed to live up to the sensational expectations created by the first. The principal new Washingtoniana may be briefly characterized as follows: J. C. Fitzpatrick, ed., *George Washington, Colonial Traveller, 1732-1775* (Indianapolis: Bobbs-Merrill)—a day-by-day record of Washington's early life constructed from his diary and letters; Lucretia P. Osborn, ed., *Washington Speaks for Himself* (N. Y.: Scribner's)—a similar compilation covering his entire life; E. E. Prussing, *The Estate of George Washington, Deceased* (Boston: Little, Brown)—an important and illuminating study of Washington's investments and economic activities; and J. D. Sawyer, *Washington* (2 vols., N. Y.: Macmillan)—chiefly valuable for its more than one thousand portraits and illustrations.

Jackson and Wilson.—Other figures in American public life also received attention. G. W. Johnson, *Andrew Jackson: An Epic in Homespun* (N. Y.: Minton, Balch), is a readable and entertaining book which makes no fresh revelations regarding Jackson's life or times. Of greater significance was the appearance of the second volume of J. S. P. [?], ed., *Correspondence of Andrew Jackson* (Washington: [?]) covering the years 1819. An [?] was the [?] volume [?]

lesser luminaries: Allan Nevins, ed., *The Diary of Philip Hone, 1828-1851* (2 vols., N. Y.: Dodd, Mead)—selected from the 28 volumes of manuscript in the New York Historical Society and valuable for intimate glimpses of New York life and personalities during the period; and John Chipman Gray and John Codman Ropes, *War Letters, 1862-1865* (Boston: Mass. Hist. Society)—observations on war-time affairs and interests by two unusually intelligent observers. The most widely discussed book and one which caused police suppression in some parts of the country was Nan Britton, *The President's Daughter* (N. Y.: Elizabeth Ann Guild)—being the intimate disclosures of the purported mistress of the late President Harding. Signs of the approaching presidential campaign were seen in two lives of a leading aspirant, both of which were of more substantial worth than political biographies usually are: H. F. Pringle, *Alfred E. Smith* (N. Y.: Macy Masius); and Norman Hapgood and Henry Moskowitz, *Up From the City Streets* (N. Y.: Harcourt).

Miscellaneous. — As for other American personalities the attention of biographers was widely scattered. Of lives of literary men perhaps the most notable were: J. B. Atkinson, *Henry Thoreau: the Cosmic Yankee* (N. Y.: Knopf)—a careful and enlightening interpretation, which may in part be footnoted by Odell Shepard, ed., *The Heart of Thoreau's Journals* (Boston: Houghton, Mifflin)—consisting of well-selected extracts; Honoré W. Morrow, *The Father of Little Women* (Boston: Little, Brown)—a sympathetic study of

Bronson Alcott; L. R. Morris, *The Rebellious Puritan* (N. Y.: Harcourt)—an intimate and understanding analysis of Hawthorne in relation to his environment; H. S. Gorman, *Hawthorne* (N. Y.: Doran)—a short and somewhat conventional sketch; and Slason Thompson, *Eugene Field* (N. Y.: Appleton)—a revision and enlargement of an earlier biography.

Paxton Hibben, *Henry Ward Beecher* (N. Y.: Doran), is a surgical operation by one who was eager to believe the worst of his patient. Gamaliel Bradford, *D. L. Moody* (N. Y.: Doran), is a sympathetic appraisal which corrects certain popular notions of the great evangelist. Moody's rationalistic contemporary, *Colonel Bob Ingersoll* (Garden City: Doubleday), is the subject of a readable and laudatory biography by Cameron Rogers. Other important biographies, illustrating the diverse interests of the biographers, are A. D. H. Smith, *Commodore Vanderbilt* (N. Y.: McBride)—the best life of the first modern money-maker; D. T. Lynch, *"Boss" Tweed* (N. Y.: Boni)—based on wide research and considering fully the pathological political life of New York City from 1850 to 1875; and F. W. Wile, *Emile Berliner* (Indianapolis: Bobbs-Merrill)—the life story of the immigrant boy who invented the microphone and the gramophone. Of several books which presented a gallery of American notables, perhaps the best executed was Constance M. Rourke, *Trumpets of Jubilee* (N. Y.: Harcourt)—portraying three famous members of the Beecher family, Horace Greeley and P. T. Barnum.

AMERICAN FICTION

BY GEORGE R. STEWART, JR.

PROFESSOR, UNIVERSITY OF CALIFORNIA

ter may lend a touch of romantic strangeness, are usually written with the highest regard for reality of impression. For material novelists continue to draw most freely upon

contemporary society; volumes concerned with some problem of the modern individual are very common, but definite "novels with a purpose" are comparatively rare. Renewed interest in the War is particularly noticeable in the short story. The American past has attracted many writers (cf. similar developments in poetry and biography); the most popular fields seem to be those of the Civil War and of the pioneer West. An interesting development, doubtlessly borrowing directly from Galsworthy, is the "family novel," which tells the story of a group unit rather than of an individual; this offers an interesting reaction from the concentrated, highly unified, novel of the earlier part of the present century and a throw-back to such novels as Thackeray's *Newcomes*.

Plot Developments.—The popularity of the "family novel" emphasizes the lack of definite plot and the formlessness of much of our best contemporary fiction. *Elmer Gantry*, for instance, is a return to the picaresque technique out of which the novel originally grew. *The Grandmothers* would a few years ago have been considered merely a series of character sketches. Highly developed plots seem indeed to be shunned by most novelists, and relegated to the writers of mystery stories. A typical novel thus tends to be a biography, or section of a biography, giving some of the hero's earliest development and even ancestry, considering particularly a critical period of his life, and ending inconclusively with the close of this critical period. The novel thus seems to be stretching out a hand to biography, becoming more biographical as biography becomes more fictional.

Tendency to Brevity.—Many novels have also shown such a tendency toward brevity as to arouse the speculation that a new form might be developing intermediate between the novel and short story. A common definition of the short story declares it to be a tale which can be read at one sitting; an enthusiastic reader might thus dispose of a proportion of this year's so-called novels.

SOME OUTSTANDING NOVELS

Sinclair Lewis.—The most discussed fictional work of the year has undoubtedly been *Elmer Gantry* (Harcourt); as with most of Sinclair Lewis's books controversy has raged rather about the accuracy of the book's content than the artistry of its presentation. It has perhaps been taken too seriously; one should be able to enjoy a rascally but interesting, picaresque hero without seeing in each of his escapades a slightly veiled satire or a direct attack upon modern sectarian religion. Satire there undoubtedly is, however, and since the writer has chosen such an obvious and hackneyed theme, his latest book yields in interest to its predecessors; in bludgeoning the old home town and the business man he was insulting the ruling idols of our times, but in assailing the minister, he came close to hitting a man who was already down. Nevertheless *Elmer Gantry* is vivid with spirited conversation, uproarious comedy, and satiric exaggeration.

Willa Cather, artistically almost the antithesis of Lewis, has, like him, in her book of the year failed to attain quite her highest level. *Death Comes for the Archbishop* (Knopf) is interesting in showing a new departure; Nebraska has been abandoned for New Mexico, and the new book does not show quite so much familiarity with the setting. It is also more romantic and idealistic, and accordingly, one may say, a little less directly human.

Glenway Westcott in *The Grandmothers* (Harpers) has written a vivid book (it was awarded the Harper prize) based upon the story of a Wisconsin family through three generations. Except for a few details in detail, it is undistinguished in construction as a novel, and extreme examination would disregard its construction.

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James Branch Cabell with *Something about Eve* (McBride) continues successfully in method and manner his tradition of Poictesme. Mr. Cabell is one of the most individual of our writers; by maintaining so long a particular style he is, however, perhaps giving the impression of imitating himself, so that his present book seems to lack the originality of the earlier ones.

Louis Bromfield in *A Good Woman* (Fred A. Stokes) presents in a highly distinguished novel contemporary America and a rebel in revolt against it.

THE SOCIAL NOVEL

Classification.—This includes a great proportion of our important novels, if under it we include those picturing in a realistic manner some phase of modern society without depending greatly for interest upon the setting. Naturally this type shades into both the regional and the historical novel. Women and the many ramifications of love and marriage receive much attention. There may be mentioned Elizabeth Madox Roberts, *My Heart and My Flesh* (Viking Press); S. W. McConnell, *Rivalry* (Macaulay) the analysis of a dominating woman; Dorothy Scarborough, *Impatient Griselda* (Harper), a study of two psychological types; B. K. Seymour, *Three Wives* (Knopf); Elmer Davis, *A Strange Woman* (McBride), the story of a modern wife which by its comedy escapes being a problem novel; Edna Bryner, *Andy Brandt's Ark* (Dutton), a problem novel of family life and the American village; Ernest

... *Silent Storms* (Macmillan); ... *The Marriage Bed* (B. H. Lehman in *The* ... considers a ... and his family. ... *The Delectable* ... story and ... scenes ... man-

of Himself (Century) to reveal (?) the just-out-of-college youth. Emania Sachs with *Red Damask* (Harpers) bases a novel upon the Jewish problem. Upton Sinclair's *Oil* (Boni & Liveright) is concerned with the problem to the point of becoming a tract rather than a novel. *God Got One Vote* (Simon and Schuster), by F. H. Brennan, scarcely lives up to its alluring title, but is interesting as reintroducing the field of corruption and reform in politics, now largely neglected in fiction. Three unusual books picturing the periphery of society are John MacIntyre, *Slag* (Scribners), a sombre study of slums and their low criminal classes; John Owen, *The Giant of Oldbourne* (Houghton), the poignant story of a circus freak; Frederick Niven, *Wild Honey* (Dodd, Mead), a novel based upon vividly pictured hobo life.

THE REGIONAL NOVEL

Interest is gained from the "local color" picture of some special place. The extreme of this type has fallen off greatly in popularity since the last generation, and although many of the books already mentioned depend to some extent on their background, the attempt is generally made to fuse it with the action and characters. Zephine Humphrey in *Winter Wine* (Dutton) has projected a character study against the background of a Vermont winter. Julia Peterkin's *Black April* (Bobbs-Merrill) reveals negro life in South Carolina. Martha Ostenso has with *The Mad Carews* (Dodd, Mead) failed to repeat the success of *Wild Geese*; the setting is Minnesota, but the book does not root itself very firmly in the soil.

Special note is due the interest of several serious writers in the "great open spaces" which have so generally been abandoned to the producers of thrillers. Harvey Fergusson in *Wolf Song* (Knopf) shows what can be done with New Mexico of the '40's; two volumes of fine short stories give the un-movie-ized cattle lands: Charles M. Russell, *Trails Plowed* (Doubleday); Will James, *Country* (Doubleday). Californ-

AMERICAN FICTION

nia receives its share of attention in *Crude* (Payson and Clarke), by Robert Hyde, a powerful first novel of the oil districts, and *Wild Orchard* (Doran), by Dan Tothoroh.

THE HISTORICAL NOVEL

Changes in Treatment.—This class of fiction has recently been undergoing some interesting changes which tend to blend it with the background novel. The treatment is almost always realistic; historical personages are sparingly, if at all, introduced; historical events are blurred; history becomes in short merely a background against which plain men and women remarkably like our contemporaries enact their story. This method undoubtedly owes much in America to Joseph Hergesheimer. James Boyd's *Drums* (Scribner's), probably the leading historical novel of the year, serves as a good illustration. A love story of the Civil War period, it gives us only a glimpse of Jackson, a passing reminiscence of Lee, while besides these no well-known historical character enters upon the scene. In the midst of the slavery agitation we are concerned with the hero's effort to buy a nine-dollar suit; the very battle in which he is taken prisoner is not named and can be identified only by inference.

The Civil War, the most dramatic event of our history, although long neglected, seems this year to have come into its own. Its shadow lies heavily across *The Grandmothers*; in James Stuart Montgomery's *Tall Men* (Greenberg) it is treated with a touch of romance. Honoré Willsie Morrow in *Forever Free* (William Morrow) is partially successful with Lincoln as her chief character. Margaret Deland in *The Keys* (Harpers) also turns to the Civil War period for a background to serve for her problem novel; the result does not equal much of her other work. Helen Hull's *The Islanders* (Macmillan), also historical, resembles but passes the bounds of a problem novel.

The Older Style.—Historical novels of the older style are Meade Minnegerode, *Cockades* (Putnam), a romance of the time of Adams and

Gertrude Atherton *The Immortal Marriage* (Boni & Liveright), treating the old story of Pericles and Aspasia; Donne Byrne, *Brother Saul* (Century), a painstaking attempt with Paul of Tarsus which fails to equal his earlier work.

The Great War seems now to have sunk far enough into the past to allow men to treat it imaginatively. So far it has been best pictured in the short story. Capt. John W. Thomason in *Red Pants* (Scribner's) presents the Marines both in France and elsewhere. Other collections are Leonard Nason's *Three Lighis from a Match* (Doran), and two volumes dealing with the men of the air service: E. W. Springs, *Nocturne Militaire* (Doran); and the anonymous *War Birds* (Doran). Not so much a picture of the War as a satire upon it is James Stevens's *Mattock* (Knopf).

ADVENTURE AND MYSTERY

The Romantic West.—Adventure stories still draw their chief aliment from a romantic and sometimes quite impossible West. Probably a hundred volumes of this kind appear annually besides an even greater number of short stores. Most of these can, however, be passed by without comment. The ever popular Zane Grey has this year produced *Under the Tonto Rim* (Harpers), and *Forlorn River* (Harpers). A. M. Traynor's *Runaway Trail* is another western volume of more than average merit.

Other Settings.—For adventure other settings one may mention McCutcheon's successful return to colorful Graustark in *The Iron Hawk and the Raven* (Doran). Farnham Bishop, *The Hound* (Little, Brown), the War of 1812; C. Brown, *Bright Face* (Brown); Robert Board, *The Devil-M*

are Agatha Christie, *The Mysterious Affair at Styles* (Dodd, Mead), and J. S. Fletcher, *Sea Fog* (Knopf).

HUMOR

The various forms have been well represented in the year. Farce is predominant in P. G. Wodehouse's *Divots* (Doran), and *The Small Bachelor* (Doran). Christopher Morley in *The Arrow* (Doubleday) has been more successful than in *Pleased to Meet You* (Doubleday). The popular forms of biography and autobiography are parodied respectively in Frank Sullivan's *Life and Times of Martha Heppelthwaite* (Boni & Liveright), and Ring Lardner's *Story of a Wonder Man* (Scribner's). Robert Benchly has given us another humorous volume in *The Early Worm* (Holt).

MISCELLANEOUS

A few important volumes which do not fall into obvious classifications are: Edgar Lee Masters, *Kit O'Brien* (Boni & Liveright) which has been characterized as "a good boys' book and an even better book about boys"; Barbara N. Follett's *The House without Windows, and Eepersip's Life There* (Knopf), an entrancing book by a child; Murray Sheehan's *Half-Gods* (Dutton), the fanciful and at the same time realistically satiric tale of a centaur in Missouri; Elea-

nor Carroll Chilton's puzzling "melodrama of the intellect," *Shadows Waiting* (John Day); Coran Aiken's *Blue Voyage* (Scribner's), a book in the modern psychological manner somewhat after James Joyce's *Ulysses*; Barry Benefield's sentimental romance *Bugles in the Night* (Century). If by her birth Anne Douglas Sedgwick can be included as an American writer, her *Old Countess* (Houghton) must certainly be rated as one of the distinguished novels.

SHORT STORIES

Several volumes of short stories have already been mentioned. Zona Gale's *Yellow Gentians and Blue* (Appleton) is an outstanding collection. Theodore Dreiser's *Chains, Lesser Novels and Stories* (Boni & Liveright) is inferior to much of his work. Three notable volumes are Edna Ferber, *Mother Knows Best* (Doubleday), Ernest Hemingway, *Men without Women* (Scribner's), and Mary Borden, *Four O'Clock* (Doubleday). T. O. Mabbott has published some of Walt Whitman's early work in *The Half-Breed and Other Stories* (Columbia University Press). *The Best Stories of Mary E. Wilkins* (Harpers), *The Prize Stories of 1926* (Doubleday); and *The Best Stories of 1927* (Dodd, Mead), edited by Edward J. O'Brien, are important collections.

AMERICAN POETRY

BY GEORGE R. STEWART, JR.

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GENERAL TENDENCIES

Output.—An attempt to measure the significance of a year's poetry is rendered extremely difficult by the great number of volumes published. This very abundance of the poetry trends toward a high quality.

five pages with a score or two of titles, in most cases entirely or partially financed by the writer. These volumes meet usually a cold reception in the world; because of their very number (they run into several hundreds yearly) the more general reviews dispose of them ordinarily with a mere notice. There is, thus, probably as much chance as ever of a Blake or Whitman being overlooked by his own generation. The number of these volumes indicates, however, encouraging activity in poetry.

Verse Magazines.—Equally indicative is the existence of several magazines (e.g., *Poetry*, *Poet-Lore*, *Lyric West*) devoted mainly or entirely to verse. These publications are particularly useful for the opportunity which they give to the young writer; they, the more local ones especially, have a somewhat unfortunate influence in tending to establish cults and schools of writing and so to narrow rather than to broaden the poet's scope. Magazines of this type are usually the next goal of the collegiate poet after he has considered himself to excel the standards of his campus literary paper. The cultivation of verse-writing by many groups of undergraduates is undoubtedly a real factor in our present poetic history. A prize such as that offered by Witter Bynner for undergraduate verse calls out much commendable work yearly.

Subjectivism.—In approach the poetry of the present year remains predominantly subjective; our writers in most cases follow devotedly the old advice, "Look into thy heart and write." Although this advice has been well tested and found good, still one feels that it rests a little too heavily upon contemporary poetry, that many of our poets might well turn from analysis of their own frequently insignificant selves to observation of the very interesting world about them. One notices that subjectivism is more often the mode of the minor writer, and that our more important poets, as evidenced by their books of the past year, display a considerable degree of objectivity, while the work of such newer men as Vestal, Hughes, and Davison, is also to be noted.

Forms and Adaptations.—In form no particular movement in the past year calls for much comment. Convention and revolt seem to have come to terms, as one may see by the frequent harmonious existence of free and rhymed verse in the same volume. One notices the surprising facility with which old forms such as blank verse, the sonnet, and the ballad continue to adapt themselves to modern poetic demands; the pouring of new wine into old bottles does

not in this case produce its proverbial bad results. On the whole, contemporary poetry is by no means negligent of form; the negro "blues," as developed by Langston Hughes, constitute, for instance, quite as artificial a fixed form as does a French roundel.

OUTSTANDING POETICAL WORK

The following volumes represent the work for the year of poets whose literary importance has most generally been recognized: Amy Lowell, *East Wind* (Posthumous, Houghton); Edwin Arlington Robinson, *Tristram* (Macmillan); Edna St. Vincent Millay, *The King's Henchman* (Harper's); Robinson Jeffers, *The Women at Point Sur* (Boni & Liveright).

Edwin Arlington Robinson.—Two of the most important contributions of the year are based, strangely, upon mediæval subjects; this may, however, be justified by the recollection that modern America as well as modern Europe inherits the traditions and achievements of the Middle Ages, and so may with equal congruity draw imaginatively upon that source. Robinson's *Tristram* and Millay's *King's Henchman* offer, however, little in common save this background. In the former, that most appealing incident of the Arthurian cycle (at least five important poets have treated it in English alone in the last century) is presented with new appeal. The work has been hailed both as the greatest love poem and as the greatest poem yet produced in America; it received the unusual recognition for a book of verse of being selected by the Literary Guild of America as one of its books of the month. *Tristram* is scarcely to be called a narrative poem, since it seems to presuppose on the part of the reader an acquaintance with the general outline of the story; it is rather a study of human character and a questioning of the meaning of human life. With *Tristram* himself Mr. Robinson has not been entirely successful, but the characters of Isolt of Brittany, Isolt of Ireland with her "violet" eyes, King Mark, and even the minor figures are distinctive.

The poem is also memorable for its brooding atmosphere of tragedy.

Edna St. Vincent Millay.—Miss Millay's *King's Henchman*, a poetic drama, received the almost unique distinction for an American poem of being transformed into an opera by the addition of music by Deems Taylor, and being performed at the Metropolitan Opera House. Its setting is avowedly Tenth Century England, but actually a timeless land of romance. The poem is at its best when most romantic, and at its worst when striving for historical accuracy, especially in its attempts to render a pseudo-mediaeval dialect. While the failure of most modern poetic dramas consists of the inability to attain either poetry or drama, the success of *The King's Henchman* rests in the fact that the two have not suppressed but have mutually supported each other. Both in the conversation and in the numerous lyrics the language remains poetic, while a poignant tragedy, closely bordering upon pathos, is built up gradually and concentrated upon the final scene with the author's usual originality.

Robinson Jeffers' *Women at Point Sur* has come far from receiving the almost universal acclaim of the two poems just mentioned. Against his familiar setting of the California coast, the poet treats of the bizarre experiences, mainly biological, of a group of unusual, even morbid, characters. Some have gone so far as to feel that the volume marked Jeffers's poetical suicide; it has been characterized as too mystical, sexual, and rhetorical; there has been a general feeling that the poem was an offence against beauty. On the other hand, even though it falls somewhat below the level of his achievement and promise, it contains beautifully poetic parts.

Amy Lowell.—The posthumous volume, *East Wind*, might have been more considered in the case of a less well known poet; in her case, however, it seems to add little to her already established reputation.

OBJECTIVISM

Classification.—Attempt to classify the tendencies of contemporary po-

etry is perhaps hopeless. The past year has, however, shown a trend more notable than usual toward an objective approach to verse, especially in connection with some part of our national background. The success of Robert Frost, John S. Neihardt, and Vachel Lindsay in part of his work, as well as the immense flood of biography and fiction upon the same theme may account for this phase among the younger poets. For poetry dealing with the pioneer West we have for the year two notable volumes in T. H. Ferrill's *High Passage* (Yale University Press), and Stanley Vestal's *Fandango* (Houghton). The latter is in parts exceptionally successful in its use of the old English ballad form and method applied to similar material in the lives of Kit Carson and other Western heroes. Donald Davison in *The Tall Men* (Houghton) has produced a series of highly dramatic narratives in blank verse. His is the poetry of action based on historical material; his background is the Tennessee country, for poetry an almost virgin field.

Negro Verse.—The very promising development of negro poetry continues; it can largely be placed under the head of objective poetry since both Langston Hughes in *Fine Clothes to the Jew*, and James Weldon Johnson in *God's Trombones* (Viking Press) are more interested in interpreting their own race than themselves. The latter of these is an interesting rendering into blank verse of a series of old-time negro sermons. Langston Hughes' volume is a more important contribution of interesting experiment and real achievement. In his frequent "blues" he has given artistic finish to the primitive form, and has at the same time maintained the primitive emotional tone. In his poetry the contemporary American negro, especially of the cities, appears in the characteristic moods of gaiety and tragedy, although the latter predominates.

MISCELLANEOUS POETRY

The great mass of contemporary verse is prevailingly subjective in tone with the mood reflective or philosophical rather than purely

lyric. A volume which has occasioned much comment is Sherwood Anderson's *A New Testament* (Boni & Liveright). Lacking the interest and power of much of his work in prose, this book of free verse, mystical and inchoate, an attempt at self-revelation, is on the whole unconvulsive and unsatisfying. Although there are about parts a certain attractiveness and charm, Mr. Anderson will not, by this volume, achieve a place among the poets.

Nathalia Crane with *The Singing Crow and Other Poems* (Albert and Charles Boni) continues her career as child poet. Although she has some whole-hearted admirers, her last volume has been generally accepted as the work of an unusual child scarcely fit to be judged by the more rigorous standards; her outstanding characteristics are a sense of form remarkable for a child, and a more naturally child-like originality in subject-matter and diction.

Archibald MacLeish in his third book of verse, *Streets in the Moon* (Houghton), has attained a high level. His tendency is on the whole metaphysical and philosophical, and in many cases he has proved himself daringly experimental. Hart Crane's *White Buildings* (Boni & Liveright) shows some points of similarity with the preceding volume in its highly wrought and often difficult, obscure efforts at an interpretation of modern life in philosophical terms. Maxwell Bohenheim in *Returning to Emotion* (Boni & Liveright) has by his title boldly accepted the criticism of the reviewers that his work was unduly lacking in emotion; the reviewers generally have, however, been once more unsatisfied. The present volume will probably add or subtract little from his reputation.

John Hall Wheelock's *The Bright Doom* (Scribner's) is a collection of lyrics beautifully rendered in word, and often as exquisite in their poignant expression of mood. Countee Cullen must be separated from the other negro writers mentioned above, because his work is individualistic and lacks a specially racial touch. His *Copper Sun* (Harper's) is a decided improvement upon his already

good first volume, and marks him as a rising figure in poetry. Satirists and humorists, except of the comic magazine variety, are somewhat wanting among our poets; we have one, however, in Leonard Bacon who sometimes attains the higher levels of poetry as well; his *Guinea Fowl and other Poultry* (Harper's) is another interesting volume.

Other valuable contributions to the poetry of the year are Genevieve Taggard, *Words for the Chisel* (Knopf); Samuel Loveman, *Hermaphrodite* (W. Paul Cook); James Rorty, *Children of the Sun* (Macmillan); Hugh Western, *Serenade* (Walter M. Hill); Beatrice Ravenel, *Arrow of Lightning* (Harold Vinal); David George Plotkin, *Ghetto Gutters* (Thomas Seltzer); Marguerite Wilkinson, *Citadels* (Macmillan).

ANTHOLOGIES, COLLECTIONS, AND REVISED EDITIONS

The year has seen many collections of verse both historical and contemporary, but nothing which seems likely to be of lasting importance. Of the more academic C. T. Copeland's *The Copeland Reader* (Scribner's) seems outstanding. The result of many years' teaching experience at Harvard University, it is avowedly the result of personal preference. Sara Teasdale's collection, *Answering Voice* (Macmillan), a hundred love lyrics by women represents an interesting new approach. *A Little Book of American Humorous Verse* (McKay) has been compiled by T. A. Daly, *The Bookman Anthology, second series* (Doran) may also be mentioned.

More distinctive of present trends are several collections of popular or so-called folk material. Here are *The Minstrelsy of Maine* (Houghton), songs of the Maine woods and coast collected by Fannie H. Eckstrom and Mary W. Smyth; Charles J. Finger's *Frontier Ballads* (Doubleday) which is concerned largely with material from the plains, and Carl Sandburg's *The American Songbag* (Harcourt) of more diverse origin.

Ezra Pound's *Personae* (Boni & Liveright) is composed of his collected poems and translations. Edith

M. Thomas's *Selected Poems* (Harper's), and Amelia Josephine Burr's *Selected Lyrics* (Doran) have both appeared. William Rose Benet has published his selected poems under the title, *Man Possessed* (Doran), and Witter Bynner, a revised edition of *Grenstone Poems* (Knopf).

BELLES LETTRES AND CRITICISM

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GENERAL

Within the *omnium-gatherum* called *belles lettres* are generally included all those works, especially essays, with literary pretensions, not classifiable under recognized heads. The personal essay in its purer forms seems at the present time to be moribund in our literature. Although the writing of many of our critics—e.g., Mencken and Sherman, to choose diverse examples—contains a large personal element, this is generally incidental to the social or literary views presented. Col. Charles A. Lindbergh's *We* (Putnam) may be called either a bit of an autobiography, a travel narrative, or a personal essay, in any case its charming simplicity of manner and its intimate connection with the most dramatic event of the year are likely to give it a permanent niche in literature.

More technical works excluded, the greater part of our contemporary expository writing can be called either social or literary criticism. The two have a strong, perhaps too strong, tendency to interlock so that a common way of interpreting literature is by a study of its social background, while an equally common method of diagnosing social ills is to observe their expression in literature.

SOCIAL STUDIES AND CRITICISM

American Development.—The year has seen the publication of two unusually important works upon the history of American development, both of which are of literary as well as of historical value. C. A. and M. R. Beard have published *The Rise of American Civilization* (2 vols., Macmillan), a work the field of which is sufficiently defined by its title. V. L. Parrington's *Main Currents in*

American Thought (Harcourt) in its first two volumes traces its subject through the colonial period and the Romantic Revolution down to the end of the Civil War; its material is drawn largely from writers usually classed as literary, but it is much more than another history of literature.

Instead of attempting to explain the genesis, several other important books deal with description and diagnosis of the contemporary American mind. Langdon Mitchell in *Understanding America* (Doran) analyzes the "American malady" as a boredom produced by lack of conception of what really is the "good life"; this highly arousing volume has, as one might expect, received both praise and blame. Edwin A. Park's *New Backgrounds for a New Age* (Harcourt) is another important book which attempts to arrive at esthetic standards congruous with the age in which we live. Still another study of American civilization is presented by Lewis Mumford in *The Golden Day* (Bonl & Liveright).

"Menckanism" continues to be the most vociferous and at the same time the most ubiquitous of present-day attacks upon the existing order. The eponymous hero of the movement, H. L. Mencken, has fired another fusillade in *Prejudices, Fifth Series* (Knopf), and the faithful companion George Jean Nathan has seconded him with *The House of Satan* (Knopf), and *Land of the Pilgrims' Pride* (Knopf), the latter a reprint from "Clinical Notes" in the *American Mercury*. None of these volumes adds much, if anything, new to the already established tradition, but they are as usual interesting reading. A much more widely diffused expres-

ENGLISH LANGUAGE AND LITERATURE

sion of the same dominant ideas is to be found in much of our fiction, magazine writing and literary criticism. Don Marquis in *The Almost Perfect State* (Doubleday) furnishes a comic relief, not without some penetrating philosophy, to the too often gloomy business of social study. G. B. Grinnell's *By Cheyenne Campfires* (Yale University Press) treats an anthropological subject with literary finish.

Religion.—The year has not been fruitful in religious writing. Woodbridge Riley has attacked the faiths from a rationalistic point of view with *From Myth to Reason* (Appleton). The ever popular Bruce Barton has attempted the statement of a modern religion in *What Can a Man Believe* (Bobbs-Merrill).

LITERARY CRITICISM

Book Clubs.—As a force in shaping opinion the continued existence of the various book clubs is perhaps the most dominant single element at the present time. Although the clubs attempt little or no exposition or interpretation, the very fact that monthly they each through a committee of prominent writers and critics select a certain book and recommend others, exerts an immense influence upon the taste and the opinions not only of the subscribers but also of an unascertainable number of others, who are affected by the publicity thus afforded a book. The selection in itself thus constitutes an effective tacit or negative literary criticism. The success of the movement is vouched by the recent formation of similar organizations of a

more specialized nature, to select e.g. books of religion and poetry.

Brooks and Others.—With the death of Stuart P. Sherman American criticism has suffered a most regrettable loss; his latest volume *The Main Stream* (Scribner's) consisted of book reviews, which with accustomed felicity managed to be more than merely book reviews. Van Wyck Brooks has in *Emerson and Others* (Dutton) contributed a volume in which social criticism, in the main adverse criticism of America as a place for genius, is nearly as prominent as is the literary study; Emerson takes about half the volume while the "others" are scattered literary figures. W. G. Clifford in *Books in Bottles* (Dial Press) has produced a series of literary essays of much charm. Elmer Davis in *Show Windows* (John Day) ranges for subjects over men, affairs, and books. Edwin Muir's *Transition* (Viking Press) consists of essays on contemporary literature. Sketches of living persons, especially writers, form the material of Elizabeth Shipley Sergeant's *Fire under the Andes* (Knopf), and Frank Harris's *Latest Contemporary Portraits* (Macaulay).

Among academic and scholarly contributions of the year Prof. John Livingston Lowes' *Road to Xanadu* (Houghton) is outstanding. An exhaustive study of the sources of Coleridge's poetry, the material of the book is such as has often been developed into dry-as-dust articles for *Englische Studien*. In this case it has become not only an illuminating study of a great poetic mind but also a work of art in itself.

ENGLISH LANGUAGE AND LITERATURE

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FIELD OF STUDY

The historical study of a language and its literature, like the study of all subjects which cover a wide field or an extended period of time, advances by two types of scholarly work. One type is concerned with

the extensive investigation of special problems, often highly technical and, to the general reader, unimportant. The other, basing its conclusions upon such special investigations, attempts to make a synthesis of them and to draw from their juxtaposi-

tion the larger and more general facts of literary history.

Of works of the former class American scholars have published during 1927, as in former years, a large number. It is impossible even to list the 300 or more titles of these articles and monographs in the space available here. A complete bibliography by the present writer will be found in the March issue of the *Publications of the Modern Language Association of America*.^{*} The present survey will include only the works of large scope, general interest, or special importance by which the progress of the year has been marked.

THE ENGLISH LANGUAGE

One of the outstanding publications of the year is *A Bibliography of Writings on the English Language*, by Arthur G. Kennedy. It includes everything published from the beginning of printing to the end of 1922. Some idea of the extent of the work may be gathered from the fact that it contains more than 13,000 titles of books and articles. *English Spelling: Its Rules and Reasons* is by W. A. Craigie, the distinguished editor of the great Oxford Dictionary. *The Knowledge of English*, by George P. Krapp, contains thirty short chapters on such topics as English To-day, The Levels of English Speech, The Purist Attitude, The Causes of Structural Change, etc. Somewhat similar matters are discussed in Charles C. Fries's *The Teaching of the English Language*. Mention may be made also of *The New Century Dictionary*, in three volumes, a valuable feature of which is the illustration of words by many new quotations, especially from recent and contemporary literature.

OLD ENGLISH LITERATURE

The earliest period of English literature, so thoroughly studied in the past, is a field in which less activity appears at the present time. One of the last publications of the late A. S. Cook is a paper on the "Sources of the Biography of Aldhelm" (*Trans. Conn. Acad.*). C. H. Slover has assembled some interesting evidence on

the subject of "Early Literary Channels between Britain and Ireland" (*Univ. of Texas Studies in English*). Fr. Klaeber has published textual commentary on the Waldere fragments (*Anglia*) and some comparative notes on "Attila's and Beowulf's Funeral" (*PMLA*). Kemp Malone's "Hrethric" (*PMLA*) is a study of this character in *Beowulf*, in the light of Scandinavian tradition.

MIDDLE ENGLISH LITERATURE

Chaucer.—The long expected *Concordance to the Complete Works of Geoffrey Chaucer* has at last appeared. It was compiled under the direction of J. S. P. Tatlock and Arthur G. Kennedy and is published by the Carnegie Institution of Washington. The work takes the place of the *Chaucer Dictionary* originally projected, to which Professor Flügel gave many years of his life. Robert D. French has prepared *A Chaucer Handbook*, a convenient introduction to the study of the poet's work. Margaret Schlauch's *Chaucer's Constance and Accused Queens* is a study of the *Man of Law's Tale* in its relation to analogous stories in literature and folklore. Joseph T. Curtiss discusses "The Horoscope in Chaucer's *Man of Law's Tale*" (*Jour. of Engl. and Germ. Phil.*). Samuel Moore in "Chaucer's Pardoner of Rouncival" (*Mod. Phil.*) gathers data in elucidation of this character and his activities.

Arthurian.—A large body of literature written by Chaucer's successors in the fifteenth and early sixteenth century has been edited by Eleanor P. Hammond in a volume called *English Verse between Chaucer and Surrey*. A theory of the origin of Arthurian romance is offered in Roger S. Loomis's *Celtic Myth and Arthurian Romance*. A number of Arthurian and other studies have been gathered into a volume called *Medieval Studies in Memory of Gertrude Schoepperle Loomis*. The ballads have yielded an extensive study in L. C. Wimberly's *Death and Burial Lore in English and Scottish Ballads* (*Univ. of Nebraska Studies*). Charles H. Haskins' *The Renaissance of the Twelfth Century* assembles our

^{*} Hereafter referred to as *PMLA*.

knowledge of intellectual conditions in the twelfth century in such a way as to bring about a more general recognition of the progress and activity of this period and its contribution to subsequent civilization. James F. Willard continues his valuable annual bibliography, *Progress of Medieval Studies in the United States of America*, Bulletin No. 5.

MODERN ENGLISH LITERATURE

Elizabethan.—Hardin Craig's excellent survey of "Recent Literature of the English Renaissance" appears as usual in *Studies in Philology*. J. J. Mangan's *Life, Character and Influence of Desiderius Erasmus of Rotterdam* (2 vols.) treats an important phase of English humanism; and F. L. Schoell's *Études sur l'Humanisme Continental en Angleterre à la Fin de la Renaissance* supplements the treatment. F. E. Schelling's *English Literature during the Lifetime of Shakespeare*, long out of print, is now available in a revised edition. The same author has collected a number of papers on Elizabethan topics under the title *Shakespeare and Demi-science*, including a revised form of his study "Ben Jonson and the Classical School" in which the chief characteristics of the Age of Pope were first traced to their source in Ben Jonson.

Mary S. Steele in *Plays & Masques at Court During the Reigns of Elizabeth, James and Charles* is a chronological list of performances, with references to the sources. An extensive and important contribution to Elizabethan dramatic history is made in Thomas W. Baldwin's *The Organization and Personnel of the Shakespearean Company*. Samuel A. Tannenbaum has continued his study of Shakespeare's handwriting in *Problems in Shakespeare's Penmanship* and in *The Booke of Sir Thomas Moore*. In the latter he rejects the view that certain pages of this play are in Shakespeare's hand. Elmer E. Stoll's *Shakespeare Studies, Historical and Comparative in Method* presents Shakespeare's plays against the thought, practices, and conventions of his age. Hazelton Spencer's *Shakespeare Improved* is a study of

Shakespearian performances and adaptations from 1600 to 1710.

Milton.—Martin A. Larson's *The Modernity of Milton* discusses especially the religious background of Milton's ideas, his relation to Puritanism, and the extent to which he anticipated future thought. Several interesting papers on Milton have also appeared. William Haller's "Before *Areopagitica*" discusses the forerunners of Milton's tract; P. F. Jones' "Milton and the Epic Subject from British History" traces Milton's growing distrust of early English historians; Wilmon Brewer's "Two Athenian Models for *Samson Agonistes*" points out a striking parallel between Milton's poem and (especially) *Prometheus Bound* (all in *PMLA*).

EIGHTEENTH CENTURY

The second number of Ronald S. Crane's "English Literature of the Restoration and Eighteenth Century: A Current Bibliography" has appeared in the *Philological Quarterly* and is admirably critical. Crane has also collaborated with F. B. Kaye in compiling "A Census of British Newspapers and Periodicals, 1620-1800" (*Studies in Philology*). The list records over two thousand periodicals with indications as to where those in American libraries (about half) can be consulted. Katherine C. Balderston has prepared *A Census of the Manuscripts of Oliver Goldsmith*. One of the most important events of the year is the discovery of the manuscripts of James Boswell, long supposed to have been destroyed at his death, and their purchase by an American collector, Colonel Ralph Isham. They will be published in twelve volumes. A detailed account of their contents is given by Frederick M. Hopkins in *The Publisher's Weekly* for Dec. 3. A MS. notebook kept by the poet Cowper's cousin and covering the last five years of Cowper's life has been discovered and published by Robert E. Spiller in "A New Biographical Source for William Cowper" (*PMLA*). Helen C. White has studied *The Mysticism of William Blake* (Univ. of Wisconsin Studies) and Howard S. Buck

has written a small book on *Smollett as Poet*.

NINETEENTH CENTURY

Shelley and Coleridge.—Of the great romantic poets of the nineteenth century, two have been the subject of outstanding books this year. A definitive biography of Shelley has been written by Walter E. Peck in *Shelley, His Life and Work*, in two volumes. The book contains a large amount of hitherto unprinted material. *The Road to Xanadu: A Study in the Ways of the Imagination* is the title of a study of Coleridge by John L. Lowes. Professor Lowes with prodigious energy and the keenest pursuit of the scent has tracked Coleridge in his omnivorous reading, tracing the various ideas, hints, and suggestions which entered into the flux of thought that produced *Kubla Khan* and *The Ancient Mariner*.

Browning and Others.—Three studies of Browning concern various aspects of the poet's work: William C. DeVane's *Browning's Parleyings: The Autobiography of a Mind*, Katherine F. Gleason's *The Dramatic Art of Robert Browning*, and Frances T. Russell's *One Word More on Browning*. Walter L. Myers is the author of a book on *The Later Realism: A Study of Characterization in the*

British Novel, and Edward F. Payne, president of the Boston branch of the Dickens Fellowship, has gathered from contemporary sources material on *Dickens' Days in Boston*.

Contemporary.—*Modern English Playwrights*, by John W. Cunliffe, is, as the subtitle indicates, "A Short History of the English Drama from 1825." In the field of contemporary literature Flora V. Livingston has compiled what at once becomes our most authoritative *Bibliography of the Works of Rudyard Kipling*. Thomas H. Dickinson has written *An Outline of Contemporary Drama*, only part of which, however, is directly concerned with English drama.

Criticism.—A few titles of a general character may conclude this survey. Edith Rickert in *New Methods for the Study of Literature* attempts to put literary criticism on a more impersonal basis than at present. Harrison R. Steeves writes on *Literary Aims and Art*. C. H. Conley traces *The First English Translations of the Classics* and James C. Johnston discusses the art of biography in a volume called *Biography: The Literature of Personality*. Taken all in all, the year has seen the production of a large number of scholarly works, a dozen or more of which, as indicated above, are of great importance.

GERMAN LANGUAGE AND LITERATURE

BY FRIEDRICH BRUNS

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LITERARY HISTORY

In the older period the reproduction of the famous Manessische Liederhandschrift deserves the first place. So far five parts of the ten have been published (L. Insel), price of the complete work M5000. W. de Gruyter has begun the reprint of *Murners deutsche Schriften mit den Holzschnitten der Erstdrucke*. H. Brauer discusses *Die Bücherei von St. Gallen und das altdutsche Schrifttum* (H. Niemeyer). The revival in the interest of German mysticism has been quite marked of late.

Grete Lüers has made a linguistic study of the writings of Mechthild von Magdeburg: *Die Sprache der deutschen Mystik des Mittelalters im Werke der M. v. M.* (Reinhardt). O. Behaghel has collected the chips from his workshop, opuscula on the German language: *Von deutscher Sprache Aufsätze, Vorträge und Plaudereien* (Schauenburg, Lahr). The quadricentennial of the University of Tübingen has called forth G. Bebermeyer's *Tübinger Dichterhumanisten: Bebel, Frischlin, Flayder* (Tübingen, Laupp). Friedrich Gogarten, well

known in the modern religious movement, has edited a selection of Luther sermons: *Luthers Predigten* (Diederichs). Friedrich Gundolf seems to be turning his attention to the older period of German literature: *Andreas Gryphius* (W. Weiss) and *Paracelsus* (Bondi). G. Ehrismann takes up the classic age of Mhg literature in Teil 2, Abschnitt 2, of his *Geschichte der deutschen Literatur bis zum Ausgang des Mittelalters* (Beck). Hermann Weisser has given a short history of *Die deutsche Novelle im Mittelalter* (Herder).

E. A. Boucke has completed the revision of Hettner's *Geschichte der deutschen Literatur* (Vieweg); E. Castle, in the third and last volume of the *Deutsch-Oestereichische Literaturgeschichte* (Wien, Fromme) begun by Nagl and Zeidler covers the period from 1848 to 1918. W. Kosch's *Geschichte der deutschen Literatur im Spiegel der nationalen Entwicklung von 1813-1918* has progressed to Part 18 (München, Parcus), his *Literaturlexikon* to *Gotter*; the *Reallexikon* of Merker and Stammler is about to complete the second volume. Oswald Floeck has described *Die deutsche Dichtung der Gegenwart* (Karlsruhe, Gutsch); well informed, but somewhat mechanical. E. Hoffmann-Krayer has done a task well worth while: a popular and illuminating *Geschichte des deutschen Stils in Einzelbildern* (Quelle & Meyer).

From a rather mystical title, the subject of a book by H. Hamann would seem to touch similar problems, *Die Ueberseele: Grundzüge einer Morphologie der deutschen Literaturgeschichte* (Weber). H. Pongs in a very solid but readable volume takes up the problem of metaphorical expression in poetry, *Das Bild in der Dichtung* (Elwert), to be completed in two volumes. Students of literature have every reason to be grateful for E. Ermatinger's collection of essays, *Krisen und Probleme der neueren deutschen Dichtung* (Amalthea). F. J. Schneider undertakes the study of expressionism in *Der expressive Mensch und die deutsche Lyrik der Gegenwart: Geist und Form mod-*

erner Dichtung (Metzler), while W. Knevels discusses the religious element in modern lyric poetry in his *Das Religiöse in der neuesten lyrischen Dichtung* (Toepelmann). H. Spiero touches on the same field in *Die Heilandsgestalt in der neuen deutschen Dichtung* (Eckart). English readers will welcome L. A. Willoughby's *The Classical Age of German Literature* (N. Y.) and K. Breul's *The Romantic Movement in German Literature* (Cambridge, Hefner).

INDIVIDUAL AUTHORS

Klopstock's versification is the subject of a study by G. C. L. Schuchard, *Studien zur Verskunst des jungen Klopstock* (Kohlhammer). H. Schauer has edited the correspondence of Herder and Caroline Flachsland (*Schriften der Goethe-Gesellschaft*, vol. 39). Bode's *Goethes Leben* has progressed to volume 9, entitled *Der Bund mit Schiller* (Mittler); its author is V. Tornius. Goethe's attitude to labor and craftsmanship is discussed by K. Muthesius in *Goethe und das Handwerk: Sein Verhältnis zum werktätigen Volk und zur handwerklich-künstlerischen Erziehung* (Quelle & Meyer). T. Pöhlmann shows the influence of the New Testament on Goethe's approach to nature in *Goethes Naturauffassung in neutestamentlicher Auffassung dargestellt* (Furche). S. Wukadinovic is the author of a volume entitled *Goethe-Probleme* (Niemeyer). E. Castle has a volume of essays, *In Goethes Geist*. The second volume of K. Burdach's *Gesammelte Schriften zur Geschichte des deutschen Geistes* is entitled *Goethe und sein Zeitalter*. G. M. Cookson has Englished *Faust I*. J. G. Robertson's *Goethe* is a welcome addition to the English works on the poet. H. Jensen, in the publications of the Academy of Oslo, writes on *Schiller zwischen Goethe und Kant*, while Gerhard Fricke discusses Schiller's classicism in its religious significance, *Der religiöse Sinn der Klassik Schillers* (Kaiser).

An unusually large number of works center about the romantic writers. E. Behrend, engaged on a critical edition of Jean Paul Rous-

seau, has written his *Prolegomena*, discussing the problems in this task (de Cruyter). J. Bolte has edited the correspondence of J. Grimm with K. Goedeke (Weidmann) and A. Leitzmann has completed his edition of the correspondence of the brothers Grimm with K. Lachmann (Fromman"). O. Mallon has published a most valuable *Brentano-Bibliographie* (Fraenkel). H. Jaeger has analyzed Brentano's earlier lyrics in *Brentanos Frühlyrik: Chronologie und Entwicklung* (Diesterweg). The indefatigable Hans Müller makes available further documents concerning E. T. A. Hoffmann, *E. T. A. Hoffmann und Jean Paul, Minna Doerfer, etc.* (Koeln, Gehly). Reinhold Steig has edited the Bettina correspondence with Goethe (Insel). The following studies in the field of German Romanticism ought to be mentioned: H. Brinkmann, *Die Idee des Lebens in der deutschen Romantik* (Augsburg, Filser); F. Ingerslev, *Genie und sinnverwandte Ausdrücke in den Schriften Fr. Schlegels* (Askanischer Verlag); Fanny Imle, *F. v. Schlegels Entwicklung von Kant zum Katholizismus* (Schöningh); G. Egli, *E. T. A. Hoffmann: Ewigkeit und Unendlichkeit in seinem Werk* (Orell Füssli); H. Lohse, *W. Müller als Kritiker und Erzähler: Ein Lebensbild in Briefen* (Brockhaus).

LATER NINETEENTH CENTURY

We have two studies on Annette v. Droste-Hülshoff; O. Scheinweiler's

Annette v. Droste-Hülshoff in der Schweiz (Einsiedeln, Benzinger), and H. Lucke's *Annette v. Droste-Hülshoff und ihr Verhältnis zur Romantik* (Schöningh). E. E. Schmid discusses the question of Kleist's influence on Hebbel in *Hebbel und Kleist: Zwei Kapitel zur Frage des Einflusses* (München, Hohenester). The last monograph in the Hebbel-Forschungen is by Ilsa Motylew, "Verdeckte Handlung" in Hebbels Dramen.

CONTEMPORARY

We have a number of biographies. A. Kutscher has completed his biography of Wedekind, *Frank Wedekind* (2 vols., Müller). I list the following biographies of living writers: H. Ball, *Hermann Hesse* (Fischer); W. Köhler, *Hermann Stehr* (Heege); K. Busse, *Hermann Sudermann* (Cotta); G. Scheuffler, *Clara Viebig* (Erfurt, Beute); H. Spiero, *Ernst Zahn* (Deutsche Verlagsanstalt); S. Streicher, *Spitteler und Böcklin* (Orell Füssli); K. H. Bühner parallels Hesse und Keller with *H. H. und G. K.: Eine Studie* (Bonz).

The popular Austrian dramatist Schönherr is the subject of a study by A. Bettelheim, *Karl Schönherr und das österreichische Volksstück* (Martleben). The Insel Verlag has just published the first collected edition of Rainer Maria Rilke in six volumes. Hauptmann's long awaited *Till Eulenspiegle*, an epic in hexameters, is undoubtedly the literary event of the year.

ROMANCE LANGUAGES

BY GEORGE L. HAMILTON

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FRENCH

Mediaeval.—Three works of primary importance have been published during the current year on as many important subjects in mediæval literature. R. S. Loomis in his *Celtic Myth and Arthurian Romance* (Columbia University Press, pp. xii + 371) presents an original and well documented treatment of an obscure and much mooted problem. Lucy A.

Paton in her *Les Prophéties de Merlin*, 2v. xxxix + 496; 405 (Mod. Lang. Ass. Monograph Series, I) gives the text and a well rounded study of a subject, having an intimate connection with the same general theme, while J. R. Reinhard, has given an enlightening commentary in *The Old French Romance of Amadas et Ydoine* (Duke University Press), p. 218, to the edition of the roman

d'aventure he published a year ago.

The only contribution to the Old French epic is to be found in the new explanation given to a much discussed phrase in a Byzantine chronicler by G. L. Hamilton in his article "The Royal Mark of the Merovingians and Kindred Phenomena" (*Medieval Studies in Memory of Gertrude Schoepperle*, pp. 301-316). On the other hand, there are a number of important contributions to Arthurian material. For its origins one has A. L. C. Brown's, "The Irish Element in King Arthur and the Grail" (*Ib.*, pp. 95-111), and a portion of R. S. Loomis's "Problem of the Tristan Legend: Bleheris: The Diarmad Parallel: Thomas's Date" (*Romania*, LIII, 82-102); for the far-travelled sources of some of its episodes, Martha Beckwith, "A Note on Punjab Legend in Relation to Arthurian Romance" (*Med. Stud.*, etc., pp. 49-74); Rose J. Peebles, "The Children in the Tree" (*Ib.*, 285-299), and Laura H. Loomis, "Arthur's Round Table" (*Publ. Mod. Lang. Ass.*, XLI, 771-784). J. Douglas Bruce, "Mordred's Incestuous Birth" (*Med. Stud.*, 197-208), L. H. Loomis, "Mallory's Book of Balin" (*Ib.*, 175-195), and W. A. Nitze, "The Identity of Brons in Robert de Borron's *Metrical Joseph*" (*Ib.*, 135-145), have pointed out the sources of other episodes and a name, while Loomis has presented evidence for the early spread of the romances in "The Date of the Arthurian Sculpture at Modena" (*Ib.*, 209-228), and G. H. Gerould, in writing on "King Arthur and Politics" (*Speculum*, II, 33-51), has shown an inspiration, other than literary, for Geoffrey of Monmouth composing his *Historia*.

Irene P. McKeenan has written on *Guillaume de Palerne: A Medieval Best Seller* (*P. M. L. A.*, XLI, 775-808), which has been supplemented by V. Hull. *An Irish Version of Guillaume de Palerne* (*Ib.*, XLII, 1066), and an interesting work has been performed by Eunice R. Goddard, *Women's Costume in French Texts of the Eleventh and Twelfth Centuries* (Johns Hopkins Studies in Rom. Lit. and Lang., VII), p. 263.

A. H. Krappe continues his informing "Studies on the *Seven Sages of Rome*" (*Archivum Romanicum*, XI, 162-176).

Old French Vocabulary.—R. Levy, in his study *The Astrological Works of Abraham ibn Ezra. A Literary and Linguistic Study with Special Reference to the Old French Translation of Hagin* (Johns Hopkins Studies, VIII), pp. 172, has added much to our knowledge of the Old French vocabulary, and similar additions in a wider field are found in the contributions of D. S. Blondheim, "Notes judéo-romanes" (*Mélanges de philologie et d'histoire offerts à M. A. Thomas*, 35-41), and "Gleanings from the Bible of Alva" (*Med. Stud.*, 317-327). Further philological notes are found in articles by E. C. Armstrong, "Pathelin., 532, *couvrir de chaume*" (*Mélanges*, 8-10), J. D. M. Ford, "The Passage of Vulgar Latin close *u* to French rounded *i* (*ü, y*)," (*Ib.*, 157-164) and T. A. Jenkins "Two French Etymologies: *besoin, disette*" (*Ib.*, 231-240).

N. H. Clement in writing on "The Eclecticism of Rabelais" (*P. M. L. A.*, XLII, 339-384) treats in a masterly way the development of his author's philosophical conceptions. L. M. Riddle writes on *The Genesis and Sources of Pierre Corneille's Tragedies from Médée to Pertharite* (Johns Hopkins Studies, III), pp. xii+222. G. L. van Roosbroeck on "Preciosity in Corneille's Early Plays" (*Philological Quarterly*, VI, 19-31), while Ruth S. Phelps in "Amphitryon and Montespán" (*Mod. Phil.*, XXIV, 443-461), re-examines again the evidence in regard to a royal scandal. G. B. Watts throws much light on the beginnings of critical journals in his "Vincent Minutoli's *Depêches du Parnasse, ou la Gazette des Savants*" (*P. M. L. A.*, XLI, 935-941), while F. C. Green presents a careful study of a neglected theme in "The Critic of the Seventeenth Century and the Attitude towards the French Novel" (*Mod. Phil.*, XXIV, 285-295).

G. L. van Roosbroeck analyzes "An unpublished Parody of Voltaire's *Alzire*" (*P. M. L. A.*, XLII, 955-970), and A. Schinz gives us "La Date

d'achèvement de la *Nouvelle Héloïse*" (*Ib.*, XLII, 971-4).

Miscellaneous.—J. R. Foster adds to the subject of cosmopolitanism, writing on "The Abbé Prevost and the English Novel" (*Ib.*, XLII, 4430464), while J. N. Ware's discusses *The Vocabulary of Bernardin de Saint-Pierre, and its Relation to the French Romantic School* (Johns Hopkins Studies, IX), pp. viii+100. Ethel Preston, *Recherches sur la technique de Balzac: Le retour des Personnages dans la Comédie humaine* (Paris, Les Presses Françaises), pp. 286, emphasizes the fact that Balzac was the discoverer of a new fictional technique in his employment of reappearing characters. A. H. Schutz has an informing study in *The Peasant Vocabulary in the Works of George Sand* (University of Missouri Studies, vol. I, no. 1, pp. 114). H. U. Forest, "Realisme," *Journal de Duranty*" (*Mod. Phil.*, XXIV, 463-479), presents new material for the early definition of realism. Berry Cerf in his well-written *Anatole France* (Dial Press), pp. xi, 303, gives a diatribe against, rather than a criticism on, the greatest of recent French literary men.

Provençal.—One of the few prime contributions to Provençal studies made by American scholars is the edition of *The Oxford Provençal Chansonniér* (Elliott Monographs, 21), pp. xx+251, due to W. P. Shepard, who has also published "Two Derivative Songs by Aimeric de Peguilhan" (*Speculum*, II, 296-309) and "Une chanson pieuse de Daudé de Pradas" (*Mélanges A. Thomas*, 405-411).

ITALIAN

A fundamental work for the study of the language is to be found in C. H. Grandger. *From Latin to Italian. An Historical Outline of the Phonology and Morphology of the Italian Language* (Harvard University Press), pp. vii, 190. H. D. Austin continued his valuable "Dante Notes. IX" (*Mod. Lang. Notes*, XLII, 305-310), while E. H. Wilkins writes on

the possible connection between "Dante and the Mosaics of his Bel San Giovanni" (*Speculum*, II, 1-10), and J. B. Fletcher publishes "An Experiment in Metre for the *Divina Commedia* in English (*Romanic Review*, XVIII, 199-219). Wilkins presents us with an important textual study, "On the Transcription by Petrarch in V. L. 3195" (*Mod. Phil.*, XXIV, 261-268; 389-404) and "An Introductory Boccaccio Bibliography" (*Phil. Quart.*, VI, 111-122). The beginning of the publication of an interesting work, which was suppressed on account of its heretical tendencies has been begun by Marguerite Rooke, in her edition of M. Palmieri, *Libro del poema chiamato Città di Vita*, Part I. Books I-II, xv (Smith College Studies in Mod. Languages, VIII, Nos. 1-2).

SPANISH

H. R. Lang continues his important studies on Spanish versification in "The Metrical Forms of the Poem of the Cid" (*P. M. L. A.*, XLII, 523-603), and in "Las formas estróficas y términos métricos del *Cancionero de Baena*" (*Homenaje a Bonilla y San Martín*, I, 485-523). J. E. Gillet has published "Perolópez, Ranzuel, *Farca a Honor & Reuerencia del Glorioso Nacimiento*" (*P. M. L. A.*, XLI, 860-890), and E. C. Tarr has written on "Literary and Artistic Unity in *Lazarillo de Tormes*" (*Ib.*, XLII, 401-421). Caroline B. Bourland in *The Short Story in Spain in the Seventeenth Century* (Smith College Fiftieth Anniversary Publ.), pp. xi, 217, has prefaced with a discussion all too brief a very complete bibliography of the subject, and a most useful indices of authors and novels. C. E. Anibal has written "Another Note on the Voces del Cielo" (*Rom. Rev.*, XVIII, 246-252), and W. L. Fichter on "Color Symbolism in Lope de Vega" (*Ib.*, 220-231). J. Van Horne has written an informing source-study in his *El Bernardo of Bernardo de Balbuena* (Univ. of Illinois Studies in Language and Literature, XII, 1), pp. 198.

LATIN LITERATURE

LATIN LITERATURE

BY JOHN C. ROLFE

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Bibliography.—No attempt is made to give a full bibliography of the work of American scholars. Valuable as such a list might be, it would have little interest for the general reader, and scholars would look for it elsewhere. An important contribution to the subject in general is the First Part of Marouzeau's *Dix Années de Bibliographie Classique* (Paris, 1927). This work, of 461 pages closely printed in small type, and compiled from over 340 periodicals, gives a full list of books and articles on "Auteurs et Textes" published between 1914 and 1924; also (p. vii) a note on earlier bibliographies reaching back to 1700, except for the period from 1914 to 1926, for which one must depend on *Bibliotheca Philologica Classica* and the lists published each year in the American and foreign journals.

Translations.—The opportunity for the general reader to extend his acquaintance with Latin Literature constantly grows greater. Good translations appear annually, both of well-known writers and of those who are less familiar but are nevertheless of interest to the cultivated layman, as well as to the specialist. The *L. C. L.*¹ this year issues its two hundredth volume, and the friends of Greek studies may take courage from the fact that the Greek translations considerably outnumber the Latin. Of recent additions the one of widest appeal is Fairclough's *Satires and Epistles of Horace*, which follows Bennett's *Odes and Epodes* after an interval of thirteen years. That the latter have meanwhile been reprinted six times is testimony to the popularity of the Venusian bard. As was to be expected from his *Vergil*,

Fairclough's rendering is readable and accurate, although there are places in Horace where interpreters are at variance. The text, which presents fewer problems, is conservative, and so too is the orthography, the latter perhaps too much so. The vexed question of the origin of Roman Satire, about which so much has been written during the last two decades, and which has particularly busied the pens of American scholars, is dismissed with the statement that the account given by Livy vii. 2 is "essentially correct, though somewhat confused" (see *A.Y.B.* 1926, p. 1016).

Other additions by Americans are *Gellius*, vols. 1 and 2, by J. C. Rolfe, and vol. 4 of Foster's *Livy*. By Englishmen: Cicero's *Tusculan Disputations*, by J. E. King; *Philippics*, by W. C. A. Ker; and *The Speeches* (*Pro Lege Manilia, Pro Caecina, Pro Cluentio and Pro Rabirio Perduellionis*), by H. G. Hodge. These translations are not likely to affect the greatest menace to the success of our classical teaching; namely, the use of "ponies" by students in school and in the earlier years of the college course. Such students commonly resort to the cheaper and more accessible "literal translations," or the still worse interlinears. Translations have their legitimate uses, which do not include their substitution by beginners for the lexicon and the grammar.

Relation to Modern Civilization.—Almost equally numerous are books and articles showing the influence of the writers and the civilization of Greece and Rome on modern life and thought. The *D.G.R.* continues to grow by about eight books a year. New contributions by Americans are *Apuleius*, by Elizabeth Haight; *Stage Antiquities*, by J. T. Allen; *Martial*, by Paul Nixon; and *Demosthenes*, by C. D. Adams; by Englishmen, *Greek and Roman Folklore*, by W. R. Halliday, and *Æschylus and Sophocles*, by J. T. Sheppard. The new

¹ Books and periodicals are cited thus: *A.Y.B.*, *American Year Book*; *D.G.R.*, *Our Debt to Greece and Rome*; *A.J.P.*, *American Journal of Philology*; *C.J.*, *Classical Journal*; *C.P.*, *Classical Philology*; *C.W.*, *Classical Weekly*; *P.Q.*, *Philological Quarterly*; *T.A.P.A.*, *Transactions of the American Philological Association*.

publishers (Longmans, Green and Co.) are adding appropriate illustrations, a necessity in such works as the *Stage Antiquities*, and in all cases increasing the reader's information and enjoyment. It is to be hoped that illustrations may find a place in some of the earlier volumes as they appear in new editions or reprints.

Reading and Pronunciation.—The artistry of Horace's *Odes* and Cicero's *Orations*, for example, cannot be appreciated to the full, unless they are read in the original Latin, as well as being merely translated; and they should be read with a decent pronunciation. In this connection B. Ullman's "Teaching of the Pronunciation of Latin" (*C. J.*, vol. 23, pp. 24 ff.) deserves wide circulation. The articles on "Genders and Jingles," by H. Watt (*C. W.*, vol. 20, pp. 187 ff.) gives some idea of what schoolboys were once expected to learn; today the objection of some of our self-styled educators to the teaching of rules of any kind sends many students to college entirely ignorant of Latin quantities, some knowledge of which is essential for correct pronunciation; absolute perfection is no more to be expected than in French or German.

Research.—This term is often misused and misappropriated. On the one hand, research should, and frequently does, form part of the work of conscientious translators, textbook makers, and writers for the general public, no less than of that of the text-critic and the publisher of papyri. On the other hand there is such a thing as pseudo-research. As Gildersleeve wrote long ago (*A. J. P.*, vol. 25, 1904, p. 109) "the same straw is thrashed over and over again, the same categories garnished with the same examples," because the would-be investigator will not take pains to find out what has already been done; and pseudo-research takes many other forms.

That the original contributions of American scholars are abundant and varied is evident from even a cursory survey of the journals cited in our footnote. Many of these belong to the domain of what a former col-

league used to term "austere philology," such as "A Defense of the Nine-Book Tradition of Pliny's Letters," by S. E. Stout (*T. A. P. A.*, vol. 57, pp. 5 ff.), "The Second Sallustian *Suasoria*," by L. A. Post (*C. W.*, vol. 21, pp. 19 ff.), and some others. Such studies are important for the specialist, since books became antiquated in some details almost as soon as they are printed; but they have slight interest for the layman. Equally scholarly and on the border line in point of interest are H. F. Rebert's "Literary Influence of Cicero on Juvenal" (*T. A. P. A.*, vol. 57, pp. 181 ff.), B. E. Perry's "Interpretation of Apuleius' *Metamorphoses*" (*ibid.*, pp. 238 ff.), and G. L. Hendrickson's *Satira tota nostra est* (*C. P.*, vol. 21, pp. 46 ff.).

Stars and Constellations.—Gellius (ii. 21) tells how he and his fellow-students, returning to the Piræus from Aegina, watched the stars and discussed the origin of the name *Septentriones* and similar topics. Young Americans once learned, at least when reading the *Aeneid*, to recognize Orion, Arcturus and "the rainy Hyades," if not earlier. To-day, many of them enter college, or even become Bachelors of Arts, without knowing any stars except those which brighten the athletic firmament. Therefore E. S. McCartney's "Classical Astral Weather-Chart" (*C. W.*, vol. 20, pp. 43 ff. and 51 ff.) has a pedagogic and general interest.

Historical, Literary and Personal.—Here may be listed, for example, T. Frank's *Economic History of Rome*, which now appears in a second edition (Baltimore, Johns Hopkins Press, 1926) with the addition of seven new chapters; the translation of the first volume of Rostvotzeff's *History of the Ancient World* (N. Y., Oxford Univ. Press; Amer. Branch, 1927); F. F. Abbott's and H. C. Johnson's *Municipal Administration in the Greek and Roman Empire* (Princeton Univ. Press, 1926); "Ovid's *Aeneid* and Vergil's," by F. J. Miller (*C. J.*, vol. 23, pp. 33 ff.); "Short Stories from Vergil," by C. C. Mierow (*idem*, vol. 22, pp. 97 ff.); "Some Human Traits of the Scholar Pliny," by H. L. Axtell (*ibid.*, pp.

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104 ff.); "Some Aspects of the Character of Dido," by A. S. Pease (*ibid.*, pp. 243 ff.); "Cicero as a Moral Teacher," by H. C. Nutting (*ibid.*, pp. 603 ff.); M. B. Peak's "Cicero and American Lawyers" (*ibid.*, pp. 563 ff.); "An Ancient Bon Vivant," by A. C. McKinlay (*ibid.*, pp. 525 ff.);

"Notes on Shakespeare's Classical Mythology," by D. Bush (*P. Q.*, vol. 6, pp. 295 ff.); and (I fear I must add as of modern application) C. Kraemer's "Bureaucracy and Petty Graft in Ancient Egypt" (*C. W.*, vol. 20, pp. 163 ff.), the latter part of which deals with the Roman period.

GREEK LITERATURE

BY ROBERT CHISOLM HORN

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Archaeological Discovery.—A new interest in Greek studies is being awakened through archaeological discoveries. This is felt particularly in the realms of art and literature and history. The great undertaking of the American School of Classical Studies at Athens to excavate the Athenian Agora has received much notice even in the popular press; and general curiosity and interest have been aroused. Students are beginning to realize the possibilities in the study of Greek History and related subjects; a wonderful opportunity is afforded to the students of the next generation.

The Loeb Classical Library in the latter part of 1926 added to its collection the following: *Aristotle's Art of Rhetoric*, by J. H. Freese; *Aristotle's Nicomachean Ethics*, by H. Rackham; *Eusebius' Ecclesiastical History*, vol. I, by Kirsopp Lake; *Plato's Laws*, vol. II, by R. G. Bury; and *St. Basil: The Letters*, vol I, by Roy J. Deferrari. In 1927 these volumes appeared: *Aristotle: Poetica*, *Longinus on the Sublime*, *Demetrius on Style*, by W. H. Fyfe and W. Rhys Roberts; *Hippocrates*, vol. III, by E. T. Withington; *Plutarch, Moralia*, vol. I, by F. C. Babbitt; *Polybius*, vols. V and VI, by W. R. Paton; and *Strabo, Geography*, vol. IV, by H. L. Jones.

Handbooks.—We have not been disappointed in the number of volumes which appeared in the well known series *Our Debt to Greece and Rome*. These volumes were published in 1927; *Aeschylus and Sophocles*, by J. T. Sheppard; *Stage Antiquities*, by

J. T. Allen; *Apuleius and His Influence*, by Elizabeth H. Haight; *Greek and Roman Folklore*, by W. R. Halliday; *Modern Traits in Old Greek Life*, by C. B. Gulick; and *Demosthenes and His Influence*, by C. D. Adams. *Later Greek Religion*, by E. Bevan, is announced by E. P. Dutton and Co. as a recently published volume of *The Library of Greek Thought*.

Translations.—Among translations of Greek authors are the following: *The Nicomachean Ethics of Aristotle*, translated by J. E. C. Weldon (N. Y., Macmillan, 1927); and *The Dialogues of Plato*, translated by Benjamin Jowett, edited by W. C. Greene (Boni & Liveright, 1927), a large book of selections. New editions of Homer in translation are constantly appearing. Homer's *Iliad* and *Odyssey* are published separately by Warne, in the *Chandos Classics*. These contain the translation by Alexander Pope, notes by Rev. J. A. Buckley, and Flaxman's designs. Another volume in the *Oxford Translation of Aristotle*, to be completed in eleven volumes, has appeared this year; this is vol. VII, *Problemata*, by E. S. Forster (Oxford Univ. Press).

Greek Texts.—Among critical editions these are noteworthy: *Early Greek Elegy*, by T. Hudson-Williams (Humphrey Milford, 1926), containing Introduction, Text, Critical Notes, and Commentary; and *Aeneas: On Sieecraft*, critical edition by L. W. Hunter, revised by S. A. Handford (Oxford Univ. Press, 1927). This edition contains a translation as well as the text. Among editions prepared for the use of students we

welcome the *Selections from Menander*, edited by W. G. Waddell (Oxford Univ. Press, 1927) and *Euripides, The Cyclops*, edited by D. M. Simmons and R. R. Timberlake (Cambridge Univ. Press, 1927). The latter is one of the *Cambridge Elementary Classics. Selections from Plato*, with introduction and notes by L. L. Forman (Macmillan and Co., 1927), is merely a reprint of the original edition. Of interest to American scholars will be *Aristophanes' Lysistrata*, erklärt von Ulrich von Wilamowitz-Moellendorff (Berlin, Weidmann, 1927). This edition contains "Prolegomena," "Text," "Kommentar," "Beilage."

Art and Archaeology.—Two scholarly and valuable works are: *The Erechtheum*, edited by J. M. Paton (Cambridge, Harvard Univ. Press, 1927) and *Alcmenes and the Establishment of the Classical Type in Greek Art*, by Sir Charles Walston (N. Y., Macmillan, 1927). *The Architecture of Ancient Greece*, by W. J. Anderson and R. P. Spiers, revised by W. B. Dinsmore, was published by Scribner's, with a companion volume, *The Architecture of Ancient Rome*. A very useful little book is *Greek Pottery*, by Charles Dugas, translated from the French by W. A. Thorpe (London, A. and C. Black, 1926). A recent publication of value to American scholars is the *Cocus Vasorum Antiquorum: Great Britain, Oxford: Ashmolean Museum*, by J. D. Beazley (Oxford Univ. Press, 1927).

Greek History.—Volume IV of the *Cambridge Ancient History (The Persian Empire and the West)* was published by the Cambridge University Press in 1926; in 1927 appeared Vol. V (*Athens, 578-401 B. C.*); Vol. VI (*Macedon, 401-301 B. C.*); Volume I of plates. Other important works are: *Macedonia, Thrace, and Illyria*, by Stanley Casson (Oxford Univ. Press, Amer. Branch, 1926); *The History and Civilization of Ancient Megara*, by E. L. Highbarger (Balt., Johns Hopkins Press, 1927); and *The Great War between Sparta and Athens*, by B. W. Henderson (N. Y., Macmillan, 1927). *Ancient Persia and Iranian Civilization*, by Clement

Huart, in the series entitled *History of Civilization*, was published in 1927 by Knopf; another volume, *Greek Thought and the Scientific Spirit*, by L. Robin, is promised before the end of the year. *A Revision of Athenian Tribute Lists*, by B. J. Merritt and A. B. West, is a reprint from *Harvard Studies in Classical Philology*, Vol. 37, 1926. Histories dealing with a later period are: *Christ the Word*, by Paul Elmer More (Princeton Univ. Press, 1927), which is volume 4 of the author's series entitled *The Greek Tradition; Myth and Constantine the Great*, by Vacher Burch (Oxford Univ. Press, 1927); and *History of the Byzantine Empire*, by Charles Diehl, translated from the French by George B. Ives (Princeton Univ. Press, 1925). Books of more popular nature are: *A Greater than Napoleon, Scipio Africanus*, by B. H. L. Hart (Boston, Atlantic Monthly Bookshop, 1927); *Mediterranean World in Greek and Roman Times*, by Dorothy Vaughan (N. Y., Longmans, 1927); and *Greece*, by M. A. Hamilton, containing many illustrations (Oxford Univ. Press, 1926).

Greek Life and Culture.—There are several recent important works in the department of Religion. In 1925 appeared *A History of Greek Religion*, by Martin P. Nilsson, translated from the Swedish by F. J. Fielden (Oxford, Clarendon Press); in the next year appeared *The Religion of Ancient Greece*, by Thaddeus Zielinski, translated from the Polish by G. R. Noyes (N. Y., Oxford Univ. Press, Amer. Branch); and in 1927 we welcome *Themis: A Study of the Social Origins of Greek Religion*, by Jane E. Harrison, second edition, revised (N. Y., Macmillan). These works deal with other fields of study and investigation: *God, Man, and Epic Poetry*, by H. V. Routh (N. Y., Macmillan, 1927) and *Dithyramb, Tragedy, and Comedy*, by A. W. Pickard-Cambridge (Oxford Univ. Press, 1927). George Santayana's *Platonism and the Spiritual Life* is published by Scribner's (1927). R. B. Appleby's *Euripides the Idealist* is a contribution to the appreciation of this charming dramatist (Dent,

SEMITIC LANGUAGES AND LITERATURE

1927). Miss Sabin continues her work of showing the relation of classical culture to modern life in *Classical Myths That Live Today* (Silver, Burdett, 1927). Welcome contributions to the understanding of special departments of Greek life are: *The Growth of Criminal Law in Ancient Greece*, by G. M. Calhoun (Berkeley, Univ. of California Press, 1927); *Lawyers and Litigants in Ancient Athens*, by R. J. Bonner (Univ. of Chicago Press, 1927); and *The Political Ideas of the Greeks*, by J. L. Myres (Abingdon Press, 1927). An English translation out of Polish was Wagner's *The Culture of Greece and Rome* (Little, Brown, 1926). Two other works dealing with Greek culture are: *The Ancient World and Its Legacy to Us*, by A. F. W. Blunt (Oxford Univ. Press, 1927) and *Asianic Elements in Greek Civilization*, by Sir William M. Ramsay (London, Murray, 1927).

Papyrology.—Toward the end of 1926 appeared the excellent *Greek Papyri in the Library of Cornell University*, an important contribution in the realm of Papyrology by two American scholars, W. L. Westermann and C. J. Kraemer, published by the Columbia University Press. Of the same date is a University of Pennsylvania dissertation, *The Use of the Subjunctive and Optative Moods in the Non-Literary Papyri*, by Robert C. Horn. The language of the papyri is being studied more and more. An important contribution in this field is the recent work by B. Meinersmann, *Die lateinischen Woerter und Namen in den griechischen Papyri* (Leipzig,

Dieterich, 1927). Among other important foreign publications in this department are: *Les Papyrus Bouriant*, by Paul Collart (1927); *Papyri russischer und georgischer Sammlungen, Literarische Texte*, Band 1, by G. Zereteli and O. Krueger (Tiflis, 1925); *Sammelbuch*, Band 3, Erste Haelfte, by F. Bilabel (de Gruyter, 1926); and *Grammatik der griechischen Papyri aus der Ptolemäerzeit*, Band II, Erste Haelfte, by E. Mayser (de Gruyter, 1926).

An American publication of great value is *The Monastery of Epiphanius at Thebes*, which is a publication of the Metropolitan Museum of Art Egyptian Expedition (N. Y., 1926). Volume 1 is by H. E. Winlock and W. E. Crum, and volume 2 by W. E. Crum and H. G. Evelyn White. Volume 17 of the *Oxyrhynchus Papyri*, by A. S. Hunt, appeared at the end of the year. This important volume, a memorial to the late Professor Grenfell, contains a number of classical fragments, and documents of the Roman and Byzantine periods. Among the authors represented are Callimachus, Lycophron, Pindar, and Thucydides. Among the publications of Doran in 1927 is volume 6 of the *Vocabulary of the Greek New Testament*, by J. H. Moulton and Geo. Milligan. All who are interested in Papyrology and the subjects which it touches will welcome the new and revised edition of *Light from the Ancient East*, by Adolph Deissmann (Doran, 1927). Not only is the subject interesting, but the skill and ability of the author make it fascinating as well.

SEMITIC LANGUAGES AND LITERATURE

BY GEORGE A. BARTON

PROFESSOR, UNIVERSITY OF PENNSYLVANIA

PHILOLOGY AND LITERATURE

The year 1927 has witnessed the publication of an unusual number of important works by American scholars. These publications belong to four departments of the subject, as follows:

Semitic and Hamitic.—In the field of general Semitic and its relation to Hamitic, Professor William H. Worrell has published an important book entitled *A Study of Races in the Near East* (N. Y., Appleton). He holds the Hamites and Semites to be

of one stock, thinks their original home the Sahara Desert, which was fertile during the last Glacial Period, and finds in the Hamitic languages survivals of linguistic phenomena older than those of the Semitic.

Assyria and Babylonia.—No less than five publications, each of great importance, have appeared. The first of these is *Ancient Records of Assyria and Babylonia* by Professor D. D. Luckenbill of the University of Chicago, whose untimely death last June inflicted a great loss upon Assyriological research. The two volumes of his *Records* issued by the University of Chicago Press (the first of which bears the date 1926) cover the historical inscriptions of Assyria only. The volume on Babylon was to follow. Like J. H. Breasted's *Ancient Records of Egypt*, Luckenbill's volumes give the English reader Assyria's historical records in an authoritative translation.

Two important works from the pen of Dr. Leon Legrain were issued by the University Museum, Philadelphia. One is entitled *Royal Inscriptions from Nippur and Babylon*, the other, which is issued in two parts, *The Culture of the Babylonians*. The former of these consists of hitherto unpublished inscriptions (mostly fragmentary) but which fill many important gaps; the latter, the Museum's rich collection of Babylonian seals with full description and interpretation. Dr. Legrain is an authority in this field and his work is well done. Yale University Press has issued a posthumous work of Professor A. T. Clay, *Letters and Transactions from Cappadocia*. It is a volume in the series *Babylonian Inscriptions in the Collection of J. B. Nies*. It contains 233 texts copied with all of Professor Clay's accuracy and skill and practically doubles the material from Cappadocia hitherto accessible.

Professor Edward Ghiera has also issued through the Press of Paul Geuthner, Paris, the first volume of the publications of the American School of Oriental Research at Baghdad. It is entitled *Joint Expedition with the Iraq Museum at Nuzi*, and contains 100 of the unique texts found

by Professor Chiera in 1925. Other volumes, to contain the rest of the tablets found and the archaeological objects, which, with the texts, reveal a new factor in the history of the Near East, are to follow. Finally the University Museum in Philadelphia has issued jointly with the British Museum a superb volume entitled *Tell-el-Ubaeid*, which adequately describes the remarkable discoveries at this earliest of Babylonian historical sites.

Hebraic Old Testament, the Talmud, and Judaism.—The year has been signalized by noteworthy publications. The "Commentary on Daniel" in the *International Critical Commentary* (N. Y., Scribner's), by Professor J. A. Montgomery, of the University of Pennsylvania, is one of the best volumes in the series. Professor George F. Moore's *Judaism* (2 vols., Harvard Univ. Press), which treats the Judaism of the first centuries of the Christian era, the age of the Tanaim—a field in which Professor Moore is one of the few living authorities—is the most notable publication of the year in Semitics. Professors Max L. Margolis and Alexander Marx have, in *A History of the Jewish People* (Phila., Jewish Publication Society), accomplished the impossible by presenting an authoritative and readable history of the Jews from the earliest times to the present in a volume of but little over 800 pages.

Volume IV of the *Hebrew Union College Annual* contains important contributions by the distinguished Faculty of that institution, the most important of which is that of President Julian Morgenstern, entitled "The Oldest Document in the Hexateuch." President Morgenstern reconstructs part of the J Document around the Decalogue of Ex. 34 as a nucleus, finds that it has a Kenite background, and re-names it K. Finally we must notice *The Old Testament, an American Translation*, edited by Professor J. M. P. Smith of the University of Chicago, and issued by the Press of that institution. Associated with Professor Smith in the work are Professors Alex. R. Gordon, T. J. Meek, and Leroy Waterman. The aim was

LIBRARIES

to give American readers in modern English a version based on present-day knowledge of the textual criticism and of Hebrew. The work is done well and reverently.

Syriac Scholarship.—Professor J. A. Montgomery, of the University of Pennsylvania has issued an interesting brochure entitled *The History of*

Yabahalla III, Nestorian Patriarch, and of his Vicar, Bar Sauma (N. Y., Columbia Univ. Press). The document here translated affords a glimpse of Nestorian Christianity in the Far East at the end of the thirteenth century, and of the journey of an ambassador from there to the Pope. It supplements Marco Polo.

LIBRARIES

BY CARL H. MILAM

SECRETARY, AMERICAN LIBRARY ASSOCIATION, CHICAGO

LIBRARY SERVICE

According to William S. Learned, the most promising movement among librarians at the present time is the study of the means for securing an intelligent diffusion of service. The recognition of the possibilities in adult education, the movement to extend library service, the study of the training of librarians, are indicative of the trend of the library profession. The American Library Association is fostering these new movements.

American Library Association.—The official organization of the profession in the United States and Canada, the American Library Association, was founded in Philadelphia in 1876. The purpose of the Association is "to promote library service and librarianship." The Association celebrated its fiftieth anniversary in Philadelphia and Atlantic City in 1926. In 1876 there were 103 members; in 1927 there are more than 10,000. Headquarters for the Association are maintained at 86 East Randolph Street, Chicago, where there is a salaried secretary and a staff of trained librarians and editorial and clerical assistants. The Association is administered by a slowly changing board of twelve members. Its policies are determined by a council of members of the Association. Much of the work of the Association is done by sixty-four volunteer committees of the members themselves. The following paragraphs describe briefly some of the activities of the Association.

Library Extension.—Over 50,000,000 people in the United States and Canada, 93% of them living in rural districts, are without public library service according to a study made by the Committee on Library Extension. This study has been published by the Committee under the title "Library Extension, A Study of Public Library Conditions and Needs." The Committee is especially concerned with the establishment of county and local libraries and of state library extension agencies in states without them.

EDUCATION FOR LIBRARIANSHIP

The Board of Education for Librarianship was established in 1924 "to study library service and its changing needs and promote the further development of education for librarianship." A list of accredited library schools is published annually. A library curriculum study, which includes the preparation of textbooks, is being conducted by the Board at the University of Chicago, under the direction of Dr. W. W. Charters, professor of Education at the University of Chicago.

Library Schools.—Two new library schools have been established during 1927, one at McGill University, the other at the New York State College for Teachers at Albany. Plans are being made for the new graduate library school at the University of Chicago which will be opened in 1928.

FOREIGN SERVICE

Books for Foreign Countries.—For the last few years the Association

through a special committee, and with funds provided for the purpose, has met requests from reference and research libraries in Europe for American books and periodicals. The need for this aid resulted from the depreciation of foreign currency which for a time made it quite impossible, and still makes it difficult, for foreign libraries to purchase American publications.

Work with Foreign Born.—Through an active committee information is furnished to inquirers regarding books in foreign languages, notably Armenian, German, Greek, Hungarian, Italian, Polish, Russian, Spanish Ukrainian, and Yiddish. Pamphlets have already been published on "The Polish Immigrant and His Reading," and "The Italian Immigrant and His Reading," and "The Greek Immigrant and His Reading."

WORK WITH THE BLIND

Better organization of library service for the blind has been the result of the cooperation of a number of organizations and committees with the American Library Association. Lists of children's books have been embossed and distributed. An effort is being made to increase the number of books in Braille. Experiments are being conducted with two side printing and the Garin process of duplication.

ADULT EDUCATION

Board of Library and Adult Education.—Following the work of the special Commission on the Library and Adult Education, which culminated in the publication of its report "Libraries and Adult Education 1925-26" (Macmillan), the A. L. A. appointed a permanent Board on the Library and Adult Education, with an executive assistant at Headquarters. The Board is continuing and extending the work begun by the Commission.

Through the offices of the executive assistant at A. L. A. Headquarters, there passes a large amount of correspondence from libraries and other institutions asking for advice and methods of establishing adult educa-

tion services. News and plans, developments and projects of librarians who are developing the adult education departments in their institutions are exchanged through the office. The publication of reading courses (described below) has brought letters from many individuals who are educating themselves by means of books and reading. The quarterly publication, *Adult Education and the Library*, supplements the basic report, "Libraries and Adult Education."

READING COURSES

Book Lists.—To assist libraries in their adult education work the Association is publishing a series of reading courses under the title "Reading with a Purpose." The object of these courses is to make available in a little booklet of about 5,000 words the advice which a specialist would give to an inquirer desiring to supplement his education by systematic and purposeful reading. Each course consists of a carefully selected list of six or eight books (in a few cases more) arranged for consecutive reading and study, preceded by a brief introduction to the subject. An effort has been made to choose authors who can prepare courses which will make a wide popular appeal and still be fundamentally sound. More than 300,000 of the courses have been distributed, chiefly through libraries.

Among the 43 courses published are: *English Literature*, W. N. C. Carlton; *Ten Pivotal Figures of History*, Ambrose W. Vernon; *Some Great American Books*, Dallas Lore Sharp; *Ears to Hear: A Guide for Music Lovers*, Daniel Gregory Mason; *The Modern Drama*, Barrett H. Clark; *The Practice of Politics*, Raymond Moley; *The French Revolution, as Told in Fiction*, William Stearns Davis; *Psychology and its Use*, Everett Dean Martin; *Philosophy*, Alexander Meiklejohn; *Religion in Everyday Life*, Wilfred T. Grenfell; *Europe of Our Day*, Herbert A. Gibbons; *Architecture*, Lewis Mumford; *The Modern Essay*, Samuel McChord Crothers; *George Washington*, Albert Bushnell Hart.

A. L. A. Catalog 1926.—This catalog includes 10,000 titles, classified and annotated, to serve as an aid in book selection and book buying to libraries of every size and class. The list has been compiled by a special staff with the cooperation of leading librarians and specialists in many fields.

The Booklist.—The most important publication of the Association is the *Booklist*, a monthly guide to new books, begun in 1903. About 200 books with annotations are listed in every number. Selection of these titles is based upon the decisions of staff book committees in many large libraries supplemented by the judgment of expert reviewers. The list so constructed serves as a guide in book selection to libraries throughout the country.

The A. L. A. Bulletin.—The Association also issues an official bulletin through which its members are kept in touch with the plans and work of the Association. The *Bulletin* is issued twelve times a year, two of the issues being the Conference Proceedings and the Handbook.

Publications List.—The Association has on its list of publications nearly 200 books and pamphlets on library service, library publicity, general library administration, cataloging, library work with the foreign born, hospital libraries, and on other aspects of library work and numerous lists for the help of libraries in book selection and short lists for distribution to the public. More than half a million publications are distributed yearly by the Association. The publication business of the Association is conducted not for profit, but in the interest of library development.

GENERAL LIBRARY SURVEY

The fourth and last volume of *A Survey of Libraries in the United States* appeared in 1927. This is an exhaustive study of library methods and practice in the United States and Canada.

THE PARIS LIBRARY SCHOOL

The school was the outgrowth of a training class conducted in 1923 by

Sarah C. N. Bogle, Assistant Secretary of the American Library Association to prepare a personnel to fill positions in the libraries established by the Committee. Taken over by the American Library Association in 1924, the school now has trained 164 men and women of different nationalities.

AMERICAN LIBRARY ASSOCIATION

Officers.—President, Carl B. Roden, Public Library, Chicago, Illinois; First Vice-President, Charles H. Compton, Public Library, St. Louis, Missouri; Second Vice-President, Charles E. Rush, Public Library, Indianapolis, Indiana; Treasurer, Matthew S. Dudgeon, Public Library, Milwaukee, Wisconsin; Secretary, Carl H. Milam, 86 East Randolph Street, Chicago, Illinois.

Activities.—Activities of the Headquarters of the Association in Chicago include a free placement service, and the giving of free advice on all sorts of library matters of importance to librarians and others. Besides its Annual Meeting, held ordinarily during the summer months, the Association holds, usually, an annual Midwinter Conference in Chicago and occasional regional conferences in different sections of the country. Meetings are attended by librarians, trustees, and others interested. The forty-ninth annual conference at Toronto, June 20-27, 1927, had an attendance of nearly 2000.

International Relations.—The American Library Association is a bi-national organization, its membership including on equal terms citizens of Canada and the United States. It keeps in touch with European affairs through the American Library in Paris and the Paris Library School, and by direct contact with libraries and librarians. In 1927 delegates were sent to the Jubilee Conference of the Library Association (British) in Edinburgh. At the Conference, as a result of an investigation made by the A. L. A. an International Library and Bibliographical Committee was formed. The A. L. A. maintains a Committee on International Relations, a Committee on Books for Foreign Coun-

tries, and a Committee on Library Cooperation with the Hispanic Peoples. It sent a delegate to the International Congress of Librarians and Booklovers at Prague, and was represented on the program, in the summer of 1926. The A. L. A. was host to 50 delegates from more than 20 foreign countries at its Fiftieth Anniversary Conference at Atlantic City, October, 1926. International library cooperation was the subject of a special meeting during the Conference. International interchange of librarians, library assistants, and students, international bibliographical projects, classification schemes are some of the objectives, the attainment of which has been brought appreciably nearer during the year 1926.

Sources of Funds.—The Association receives its income from membership dues, sales of publications, endowments and gifts. Some of the large donors of recent years have been the Carnegie Corporation of New York, the Laura Spelman Rockefeller Memorial, the American Committee for Work in Devastated France (for two years the support of the Paris Library School). In 1927 the Carnegie Corporation gave \$118,750 towards the maintenance of the Association. The Carnegie Endowment for International Peace appropriated \$3,800 for international library co-operation. The Laura Spelman Rockefeller Memorial gave \$2,515 for the use of the Association in 1927 to supply foreign libraries with American periodicals and \$1,500 for work in connection with the preparation of the List of Foreign Government Serials.

PROPOSED INDEX OF STATE LEGISLATION BY LIBRARY OF CONGRESS

By an act of Congress approved February 10, 1927, the Librarian of Congress is required "to report to Congress biennially an index to the legislation of the States of the United States enacted during the biennium, together with a supplemental digest of the more important legislation of the period." It has not been possible to begin actual work under this law within the year as the appropriation

for carrying it into effect failed in the Senate filibuster. The preliminary work of preparing a scheme of subject headings has been completed and published. The limited edition is, however, no longer available for general distribution. The outline has been planned from the point of view of selecting the narrowest inclusive heading which will cover all state laws having the same objective. This means that "catch terms" have not been used unless they are accepted in all of the states. It is hoped that the index may serve as a medium for standardization of terms.

The outline of subject headings, as planned, steers a middle course between detailed indexing, which would be prohibitive for the mass of material to be covered both as to volume and expense, and the listing of acts under broad, general topics as was done in the New York State Library Index of State Legislation, 1890-1908. All permanent legislation applicable to the state as a whole will be indexed. Acts having a definite duration will not be indexed unless of special interest, nor will local or private laws, nor appropriation acts. The supplemental digest will follow the plan of the digest of important legislation prepared by the Committee on Noteworthy Changes in Statute Law of the American Bar Association, slightly elaborated. It is intended to keep a file of acts passed by the state legislatures, classified by subject, which will eventually be an invaluable collection to those interested in research work in state laws.

ASSOCIATIONS

League of Library Commissions.—The League of Library Commissions (affiliated with the A. L. A.) exists primarily for the purpose of furthering library extension through legislation, advice and legal assistance. Its membership includes besides commissions, library divisions of state departments of education and other state-wide library extension agencies. In 1925 a special grant made possible a demonstration of library work in the south. Louisiana was chosen as the state in which the

demonstration should be undertaken. The demonstration was originally planned to cover a period of three years, but since the work was retarded on account of the Mississippi floods, a new grant has made possible its continuance for two years more.

Other Associations.—Active library work and promotion are being carried on by other national associations, including the League of Library Commissions mentioned above, the National Association of State Libraries, the American Association of Law Libraries, the Special Libraries Association, the American Library Institute, the Association of American Library Schools, the Bibliographical Society of America, the Medical Libraries Association, the Library Department of the National Education Association and the American Merchant Marine Library Association.

Buildings.—Among the notable new library buildings recently completed are those at Dartmouth College, at the University of Arizona, at the University of Washington, at Los Angeles, Birmingham, Philadelphia, and at Queens (New York).

LEGISLATION

During 1926 Arkansas and Nevada passed laws permitting the establishment of county libraries. There are now county library laws in force in 33 states. In 250 counties, public funds have been appropriated for county public library service. Except in New England, where the town library is the accepted form, the county is rapidly being recognized as the logical unit for rural library service.

AMERICAN LIBRARY IN PARIS

Purposes.—This Library, located at 10 rue de l'Elysée, was organized by the American Library Association in May, 1920, for the purpose of making available in Paris the best in American literature, aiding in international exchange of information about books, libraries and library methods and promoting cordial relations between France and America through mutual association in library

work. The nucleus of the Library was the collection of books and equipment accumulated in Paris by the Association for its library service during the war. The administration is vested in a Board of Trustees and an American librarian elected by the Board from nominees suggested by the Association.

Scope of Work.—The institution works in close cooperation with American libraries and has received generous gifts from college, university and public libraries in the United States as well as from American publishers and individuals interested in the work of the Library. During the past year collections of surplus books, most of them duplicates of the titles supplied by the A. L. A. for the Army Educational program have been sent to educational institutions of the smaller European countries, where there is a dearth of books in the English language.

SCHOOL LIBRARIES

The present rapid development of the school library is in response to the need which changing methods of instruction and the broader view of education have created. It is safe to say that few school buildings are now erected in progressive communities without special provision for a centrally located and well equipped library. Where the size of the school and the town justifies, the school library is preferably administered by a full time librarian who is a library school graduate and has sufficient knowledge of educational method to fit her for a school position. The school library collection includes reference books, books for information and recreation and also mounted pictures, victrola records, and stereopticon and moving picture equipment.

PERIODICALS

The leading library periodicals are: *Libraries*, a continuation of *Public Libraries*, a monthly journal dealing with every phase of library work, published by Library Bureau, 216 West Monroe Street, Chicago, \$3 per year. *Library Journal*, a semi-monthly exponent of library progress

unexcelled in any language, published at 62 West 45th Street, New York City, \$5 per year: special rate to small libraries, branch libraries, trustees and assistants. *Special Li-*

braries, official organ of the Special Libraries Association, monthly except August and September, subscription rate including membership in the Association, \$4 per year.

COGNATE SOCIETIES

AMERICAN ACADEMY OF ARTS AND LETTERS.—633 W. 155th St., New York, N. Y.

AMERICAN ACADEMY OF ARTS AND SCIENCES.—28 Newbury St., Boston, Mass.

AMERICAN COUNCIL OF LEARNED SOCIETIES.—23 University Hall, Cambridge, Mass.

AMERICAN INSTITUTE OF ARTS AND LETTERS.

AMERICAN BOOKSELLERS' ASSOCIATION.—15 Park Ave., New York, N. Y.

AMERICAN LIBRARY ASSOCIATION.—Randolph St., Chicago, Ill.

AMERICAN NEWSPAPER PUBLISHERS' ASSOCIATION.—270 Madison Ave., New York, N. Y.

AMERICAN PHILOSOPHICAL SOCIETY.—Philadelphia, Pa.

AMERICAN SOCIETY OF COMPOSERS, AUTHORS AND PUBLISHERS.—56 W. 45th St., New York, N. Y.

AMERICAN SOCIETY OF NEWSPAPER EDITORS.—Washington, D. C.

ASSOCIATION OF NEWSPAPER ADVERTISING EXECUTIVES.—Indianapolis News Bldg., Indianapolis, Ind.

BIBLIOGRAPHICAL SOCIETY OF AMERICA.—Grosvenor Library, Buffalo, N. Y.

ASSOCIATED PRESS.—383 Madison Ave., New York, N. Y.

ASSOCIATION OF FOREIGN PRESS CORRESPONDENTS IN THE UNITED STATES.—66 Broadway, New York, N. Y.

ASSOCIATION OF NATIONAL ADVERTISERS.—17 W. 64th St., New York, N. Y.

GERMAN PRESS CLUB OF NEW YORK.—21 Frankfort St., New York, N. Y.

MODERN LANGUAGE ASSOCIATION OF AMERICA.—New York University, New York, N. Y.

NATIONAL ASSOCIATION OF BOOK PUBLISHERS.—45 W. 23rd St., New York, N. Y.

NATIONAL EDITORIAL ASSOCIATION.—131 E. 6th St., St. Paul, Minn.

NATIONAL INSTITUTE OF ARTS AND LETTERS.—633 W. 155th St., New York, N. Y.

NATIONAL PUBLISHERS' ASSOCIATION.—15 W. 37th St., New York, N. Y.

PEOPLES' INSTITUTE.—10 Fifth Ave., New York, N. Y.

UNITED PRESS ASSOCIATION.—63 Park Row, New York, N. Y.

UNITED STATES PUBLISHERS' ASSOCIATION, INC.—522 Fifth Ave., New York, N. Y.

AMERICAN LITERATURE

AUTHORS' LEAGUE OF AMERICA.—420 Lexington Ave., New York, N. Y.

AMERICAN DIALECT SOCIETY.—Warren House, Cambridge, Mass.

AUTHORS' GUILD.—2 E. 23rd St., New York, N. Y.

AUTHORS' LEAGUE OF AMERICA, INC.—2 E. 23rd St., New York, N. Y.

CATHOLIC WRITERS' GUILD OF AMERICA.—128 W. 71st St., New York, N. Y.

NATIONAL ASSOCIATION FOR AMERICAN SPEECH.—2480 Broadway, New York, N. Y.

NATIONAL COMMITTEE TO STUDY JUVENILE READINGS.—1 Madison Ave., New York, N. Y.

SIMPLIFIED SPELLING BOARD.—Lake Placid Club, Essex County, New York.

LANGUAGE AND LITERATURE

AMERICAN PHILOLOGICAL ASSOCIATION.—Trinity College, Hartford, Conn.

AMERICAN CLASSICAL LEAGUE.—First National Bank Building, Princeton, N. J.

AMERICAN ORIENTAL SOCIETY.—Yale University, New Haven, Conn.

AMERICAN PHILOLOGICAL ASSOCIATION.—Adelbert College, Cleveland, O.

COGNATE SOCIETIES

DANTE LEAGUE OF AMERICA, INC.—15
Gramercy Park, New York, N. Y.
DICKENS FELLOWSHIP OF NEW YORK.
—119 East 19th St., New York,
N. Y.

INTERNATIONAL DANTE SOCIETY.—15
W. 107th St., New York, N. Y.
MODERN LANGUAGE ASSOCIATION OF
AMERICA.—Bryn Mawr College,
Bryn Mawr, Pa.

DIVISION XXVI

THE ARTS

ARCHAEOLOGICAL DISCOVERY

BY RALPH VAN DEMAN MAGOFFIN

PRESIDENT, ARCHAEOLOGICAL INSTITUTE OF AMERICA

NEAR EAST

Hittites.—From the many clay tablets found at Boghazkeui in Asia Minor, and which are now in Berlin, have come many names which seem reasonably to be identifiable with names of Perseus and the Achaeans. One Hittite king, contemporaneous with Thothmes III of Egypt, under the exact date of 1469 B.C., is identified as Tantalus. The eponymous settler of the Peloponnesus, according to the legend, was his son Pelops.

Palestine.—The excavations at Megiddo (Armageddon) have been begun under the auspices of the Oriental Institute of the University of Chicago. The German Oriental Society has identified Shechem and is making good progress in its excavations there. The American School at Jerusalem and the Xenia Theological Seminary have conducted joint excavations at Tell Beit Mirsim, which they identify with the Biblical Kirjath-sepher. The lowest stratum gives material that dates back as far as 2000 B.C. Seven miles north of Jerusalem, at Tell En-Nasbeh, identified as the Biblical Mizpah, the Pacific School of Religion has conducted a very important excavation. The strata have given up much pottery and sepulchral material. The stratum cleared during the year dates earlier than 2500 B.C.

Ur of the Chaldees.—The joint expedition of the Museum of the University of Pennsylvania and the British Museum at Ur has provided one of the sensations of the year. Stratum after stratum has been

cleared. The cylindrical seals found in the early part of the year dated the stratum in which they were found as approximately 2600 B.C. The level next below that gave material that dated between 3200 and 3100 B.C. Then a yet lower stratum went back to 3500 B.C. The many finds in gold and gems almost rival the wonderful things found in the tomb of Tutankhamen.

GREECE

Athens.—The greatest event of the year is the announcement of the gift from the International Education Board of \$500,000 for the American School of Classical Studies at Athens, and the conditional gift of \$2,500,000 from an unnamed donor. These gifts seem to assure the beginning, probably in the spring of 1929, of the excavation of the ancient Agora at Athens. This excavation should last 40 years, and provide an outdoor archaeological laboratory for the next two generations of American teachers and scholars.

Excavations of the ground formerly occupied by the Royal Stables in Athens uncovered part of the so-called Wall of Hadrian. On both sides of the Roman wall were found many tombs dating from the sixth century B.C. down to Roman times. Many fine vases and important inscriptions were also discovered. Perhaps the finest piece found was a statue of a Roman matron.

Argolis.—Under Greek and Swedish direction a fine bee-hive tomb near the ancient site of Midea in the

Argolid was found and cleared. Four grave pits were discovered. In two of them were remains of funeral offerings and fragments of bronze and ivory. In the other two were three skeletons. Near the skeleton which has been called that of a king lay a splendid gold bowl, four magnificent signet rings, swords, spear heads and knives. Near the one called that of a queen were a necklace of sixty one gold beads and a beautiful stone lamp. The date is about 1350 B.C. The articles found have been deposited in the National Museum at Athens.

Sparta.—The work of the British School at Sparta has progressed steadily all year on the acropolis and particularly on the theatre. The best things found were an archaic statue of a warrior, and a head of a terra cotta statuette dating about 700 B.C.

Lemnos.—The Italian School has discovered an "Etrusco-Pelasgian" civilization on the island of Lemnos. The most important event was the finding of a Tyrrhenian necropolis with 130 ossuaries showing incineration burial. Many ornaments of gold and bronze were found, among which the most noticeable was a complete set, found here for the first time, of a lady's jewels comprising a gold diadem, earrings, bracelets, and necklace.

Kalydon.—A joint Greek and Danish exploration of the sanctuary of Artemis Laphria at Kalydon has laid bare the structure of the temple. Many fragments were found of sixth century B.C. sphinxes which were still covered with a bright whitish-yellow slip in the best Corinthian style.

Samos.—The German School has discovered a prehistoric settlement north of the great temple. Megaron types of houses are in the oldest stratum. Many objects found in them can be assigned to the Early Cycladic period.

Nemea.—The American School has completed its third year at Nemea. The main part of the excavation was in the Temple of Zeus and in the "Gymnasium." The site of the Stadium was also verified.

Delphi.—Mrs. Eva Palmer Sikeli-anos of New York carried through in May an ancient festival with great success. The Prometheus of Aeschylus was presented in the ancient Greek theatre, and athletic games were held in the Stadium.

ITALY

Rome.—The American Academy in Rome has been given \$1,000,000 by the International Education Board for endowment. The income from this splendid gift will be directed in the main to increasing the stipends for the fellowships and professorship in the School of Classical Studies. A permanent Professor-in-Charge seems also to be assured.

The work of Whitehead on Vespasian's Forum of Peace and the temple now known as the church of S.S. Cosma e Damiano has now come into print. The marble plan of ancient Rome was affixed to the back wall of this temple. Whitehead has fixed the date of constructions and cleared up several moot points.

Near the Via Appia Antica close to the Villa dei Quintili a number of pieces of sculpture have been found. The best pieces are a life size statue of Diana in Luna marble, and a splendid head of Dionysius.

The establishment in the church of S. Ambrogio of a new museum to house material from the provinces and show the art of the Empire, the *Museo dell'Impero Romano*, brings to forceful notice the vast amount of new material that was brought to Rome during the Colonial Exposition in 1911.

It has been advertised in public print in Italy that steps were being taken to assure the raising in the near future of the two ships known to be on the bottom of Lake Nemi, below Genzano in the Alban Hills south of Rome. The committee still wavers between draining the lake and hoisting the hulks.

The great plans of clearing the fora from the Forum Romanum to the Forum of Trajan has gone on apace. The Forum of Augustus is nearly laid bare. Beginnings have been made in opening several new

areas and in isolating the old Theatre of Marcellus, where the remains of a beautiful colonnade have been found.

Ostia.—Guido Calza has excavated the site of a *castrum* 193 x 120 meters in extent. It is the first Roman settlement on the site thus far found. Pottery which was found there can be dated toward the end of the fourth century B.C.

Pompeii and Herculaneum.—The finest thing found at Pompeii in recent years is a marvellous bronze statue, 1.49 m. high. It came to light in the tablinum of a house on the Street of Abundance. It was probably the statue of an ephebus, and was certainly cast in Greece. After reaching Pompeii it was made over into a candelabrum. The find has been published quite fully by Maiuri. A mosaic found at Herculaneum a good many years ago and sold has just turned up in private possession in Germany. The mosaic portrays the death of Archimedes, and gives a new view of the story that seems to suit the difficulties in the traditional literary account. On this mosaic Archimedes is shown seated, working in the sand on an abacus before him, and not drawing in sand on the floor, as the commentators have hitherto misread the Latin.

Etruria.—The first International Etruscan Congress will meet in Florence in April, 1928, to discuss the great advances made in Etruscan history due to the archaeological discoveries of the past few years. During the year scores of new things have been found in several excavations in necropoleis and tombs. A villa has been unearthed at Bolsena; the Etruscan necropolis at Caere (*Cervetri*) has yielded more new objects perhaps than any other excavation.

IN OTHER FIELDS

Poland.—Several prehistoric sites and early Roman cemeteries have come to light during the past year. Neolithic graves with inhumation burials were found at Ziota in 1922, but were not published until 1927. The pottery which was found, both

in corded and star types, is valuable for the purpose of cross section comparison.

Sweden.—The discovery of many settlements of the Bronze Age has thrown the early importance of Sweden back many centuries earlier than has been hitherto admitted. There is clear evidence of early trade with Southern Europe both by land and sea routes.

Yucatan.—Morley of the Carnegie Institution has read inscriptions and compared other material so that he can give the accurate dating which developed in the Old Maya Empire. The system of dating fell into disuse in the seventh century A.D. Four initial series of inscriptions have been identified thus far from the stelae found. Yucatan seems to have been discovered during the early period of the Old Empire. The dating runs back from 1635 A.D. in an unbroken sequence of 61 *katuns*, which puts the beginning of Katun 6 Ahau, when Chichen Itza was discovered, in the year 433 A.D.

NECROLOGY

Archaeology has suffered severely during the year from death. The list of the lamented deceased is a long one. From France: Paul Foucart, dean of French archaeologists, director of the École d'Athènes 1870-1890; B. Haussoullier and Th. Homolle, both of whom did a great work at Delphi; and Ed. Naville, the Egyptologist. From Holland: Jan Six, whose work both in mythology and ancient art has been outstanding. From England: B. P. Grenfell, of Oxyrrhynchus papyri fame; Gertrude Lowthian Bell, whose work on Christian churches is noted, and who created the museum of Mesopotamian antiquities at Bagdad; Sir William Ridgway, famed for his work on ancient coinage; and Sir Charles Walston (formerly the American Charles Waldstein), director of the American School at Athens 1895-1897, whose excavations at Eretria and the Argive Heraeum brought him into archaeological prominence.

In America Cornelia G. Harcum, keeper of the classical section of the Royal Ontario Museum of Archaeol-

ogy, who, although quite young, had become an authority in many archaeological lines; William Romaine Newbold, who deciphered the Cryptic MSS. in the Voynich collection and who did much work on the Chalice of Antioch; George Byron Gordon, director of the Museum of the University of Pennsylvania, who started the Museum Journal in 1910; and Francis W. Kelsey of the University of Michigan, President of the Archaeo-

logical Institute of America from 1907 to 1912, who found the money for and directed the excavations of the University of Michigan Near East Expedition at Carthage, in the Egyptian Fayoum, and at Antioch and Sisma in Asia Minor. Professor Kelsey has brought to America many pieces of newly found papyri, mostly in Greek, and dating from the first century B.C. to the fourth century A.D.

PAINTING

BY FRANCES M. HENDERSON

AMERICAN FEDERATION OF ARTS

MODERNIST ART

In the field of painting, as in many of the other arts, the year 1927 was significant, not alone because of the quality of the work produced but because of the fact that, for the first time, the work of the so-called "Modernists" was welcomed by the official art world, including conservative as well as progressive organizations. This was evidenced principally in the larger exhibitions held throughout the country, in many of which the works of modernists were given prominent placement and first award.

Carnegie Institute Exhibition.—In the Twenty-sixth International Exhibition of Paintings of the Carnegie Institute, Pittsburgh, shown from October 13th to December 4th, all of the awards were given to paintings conspicuously in the new manner. The works so honored were a Still Life by Henri Matisse of France, which received the first prize of \$1,500; a painting entitled "Motherhood," by Anto Carte of Belgium, which was awarded the second prize of \$1,000; and a flower painting entitled "Poppies," by Andrew Dasburg of Santa Fe, New Mexico, which received the third prize of \$500. In addition Antonio Donghi of Italy was awarded First Honorable Mention and \$300 for a painting entitled "Carnival"; Second Honorable Mention went to Bernard Karfiol, of New York for "Two Figures"; and the special prize of \$500 offered by the

Garden Club of Allegheny County to Max Pechstein of Germany for a painting of Calla Lilies.

The exhibition this year differed materially from all of the previous ones, in that it was composed of a number of groups of paintings, each representing the work of one artist. In order to meet the generally expressed desire that each exhibitor be represented by more than one painting, approximately one-third of the usual number of artists was invited, each artist, however, being asked to send from three to five paintings. In this way, it was thought, the public would become better acquainted with the full personality and the artistic development of each artist. The showing comprised approximately 400 paintings, of which 125 were from the United States and 275 from European countries. The four artists composing the American jury of award were Eugene Speicher, Horatio Walker, Eugene Savage and Abram Poole. This body was supplemented by a European jury comprising Felice Casorati of Italy, Maurice Denis of France, Maurice Grieffenhagen of England and Karl Hofer of Germany.

Chicago Art Institute.—In the Annual Exhibition of American Paintings set forth at the Art Institute of Chicago during November and part of December there was likewise to be noted a predominance of works by followers of new paths, and the

impression, on passing through these galleries, was that Modernism (if such it may still be called) had at last gained admission to even the conservative ranks and was henceforth to be regarded as having arrived. The prize-winning paintings in this exhibition were "Still Life" by Arthur B. Carles, which was awarded the Potter Palmer Gold Medal and \$1,000; a realistic scene from a night-club of the lower order, entitled "Three People," by John Carroll, which was given the Norman Wait Harris Silver Medal with \$500; and a brilliant atmospheric work by John E. Costigan, entitled "A Summer Day" which received the Mr. and Mrs. Frank G. Logan Medal and \$1,500. Ross E. Moffett was accorded the William M. R. French Memorial Gold Medal for a painting entitled "The Cod Fisherman," and J. G. Smith Honorable Mention for a figure painting entitled "Arrangement."

National Academy of Design.—This year for the first time the National Academy of Design of New York, around the conservative policies of which the waves of contention have rolled unceasingly for the past few years, invited a group of the leading Modernists in the field of painting to contribute to its annual exhibition and devoted one of its main galleries to this display.

The Academy elected this year thirteen new associate members, seven of whom are painters—Charles Hopkinson, Douglas Parshall, Marie Danforth Page, Lilian Westcott Hale, George M. Breustle, Maurice Fromkes, and E. K. Wetherill.

MURAL PAINTING

Nebraska State Capitol.—Notable contributions have been made during the past year by American mural painters to the art of our country. Late in November August Vincent Tack's mural decorations for the Governor's suite in the superb new building of the State Capitol at Lincoln, Neb., were completed and put in place. These decorations consist of groups of allegorical figures representing the virtues of the human race, superimposed upon a flat back-

ground, in the manner of the decoration of a Greek vase. They are in the classical style, and yet essentially of the present day. In them the artist has not only created beautiful decoration for the two rooms in which they are placed, but he has sounded a new note in American mural painting.

Pennsylvania State Capitol.—Violet Oakley's third great cycle of mural paintings for the Pennsylvania State Capitol at Harrisburg was installed in the Court Room of the Capitol and formally unveiled in May. The series is monumental in size and character, developing the theme "The Opening of the Book of the Law." The Court sat for the opening exercises, when addresses were made by George Wharton Pepper and Miss Oakley.

High Schools.—Three mural panels by George Laurence Nelson were installed in Public School 55, The Bronx, New York, above the stage in the school auditorium. They are entitled "Education Inspires Youth to Service and Loyalty." Two mural decorations by Glenn M. Shaw were placed in the auditorium of the Lakewood High School, Cleveland, Ohio. These paintings, which were the gift of two former classes of the school, represent episodes in the early history of Lakewood.

Philadelphia.—A series of seventeen mural paintings by J. Joseph Capolino was installed in the United States Marine Corps Building at Broad and Washington Avenue, Philadelphia, during the year. These depict the most important parts played by the U. S. Marines in the history of the United States from the Revolution through the World War.

Hotels.—George Harding completed a series of mural decorations for the lobby, dining room, banquet hall and grill room of the Americus Hotel in Allentown, Pennsylvania, which are attracting widespread interest and attention. The architects and the painter collaborated in this instance, having entire control of the selection of every object in the hotel's interior scheme. Mr. Harding also executed two mural paintings for the lobby and banquet room of the Pere Mar-

quette Hotel, Peoria, Illinois. One represents the missionary, Pere Marquette, with the Indians; the other shows the sailing of La Salle from Rochefort on his voyage to the Mississippi.

George Luks, the distinguished figure painter, interpreter of contemporary life, has executed a mural triptych, "The Spirit of Anthracite," for the new Necho Hotel in Pottsville, Pa. The painting is the gift to the community of Mr. Henry Sheaffer. Eustace P. Ziegler, formerly of Cordova, Alaska, now of Seattle, completed two mural paintings for the Marine Room of the Olympic Hotel, Seattle. The subjects which he chose for representation were the *St. Peter*, the ship on which Admiral Behring made his famous voyage of discovery to Alaska; and the laying of the keel for the first ship built in the Pacific Northwest. The St. Paul Hotel of Los Angeles was embellished with eight large decorative paintings by Edgar Alvin Payne of that city.

Gibbs and Others.—George Gibbs, a well known painter and author of Philadelphia, completed a notable series of mural paintings for a music room in a building of the middle West, collaborating with the architect, Edward B. Delk. These paintings represent the movements of a symphony, "Allegro," "Andante," "Rondo," and "Scherzo," and were designed to give the impression of an island of music. A series of twelve mural panels for the State Exposition Park, Los Angeles, were completed by James E. McBurney, a Chicago artist. Eight of the panels depict the leading industries of the state of California, the other four are allegorical in character.

EXHIBITS

Edwin Howland Blashfield, the distinguished dean of mural painters in America, was honored by a comprehensive one-man exhibition of his work at the American Academy of Arts and Letters, New York, which opened on November 11th to continue for five months. The exhibition comprised more than two hundred items—paintings, sketches, studies and photographs representing a wide

range of the artist's work in public and other buildings throughout the United States.

Huntington Art Gallery.—The notable collection of British masterpieces owned by the late Henry E. Huntington was made available to the public in October, with the opening of the Huntington Art Gallery at San Marino, California. This collection includes, among other famous works, Gainsborough's "Blue Boy" acquired in 1922 for a sum reported to be approximately \$800,000; and Lawrence's "Pinkie," purchased during the past year at the Michelham Sale in London for \$388,500.

The Library of Congress opened in April, to continue throughout the year, a comprehensive memorial exhibition of the works of Joseph Pennell. This comprised water colors, etchings, lithographs, pen-and-ink drawings, books illustrated and in some instances written by Joseph Pennell, the artist's etching press and some of his plates, to form the nucleus of the American Chalcographic Museum, which, by bequest of his estate, he established and endowed. Other notable memorial exhibitions of the works of American artists who have recently passed away were those of paintings by Mary Cassatt, set forth in the Pennsylvania Museum, Philadelphia, from April 30th to May 29th; and of paintings and lithographs by George Bellows, shown at the City Art Museum, St. Louis, during the month of March.

Temporary Exhibits.—Several innovations were introduced during the year in the display of temporary exhibitions. Corona Mundi, International Art Center, of New York, undertook to send exhibitions of paintings to state prisons, and with apparent success. The first of these was held in Sing Sing; the second at Leavenworth, Kan. The experiment of showing exhibitions of paintings on ocean liners during trans-Atlantic voyages was also tried and has proved popular.

ACQUISITIONS

Cincinnati.—Mr. and Mrs. Charles P. Taft of Cincinnati, presented to

the people of that city their valuable art collections, including paintings by many of the world's masters, also their home and surrounding grounds, for the establishment of an art museum. The art treasures of the Cincinnati Museum were materially increased by the addition of the Edgecliffe Collection of forty famous paintings, bequeathed by the late Mrs. Mary Emery, who had previously provided funds for a new wing of the building. This collection is valued at between \$3,000,000 and \$5,000,000, and was accompanied by an endowment fund of \$10,000 for its care and upkeep.

Chicago.—A group of paintings by contemporary Chicago artists was presented to the Carter H. Harrison Technical High School by Carter H. Harrison, a former mayor of Chicago.

Metropolitan Museum. — Perhaps the most sensational acquisition of the year was that made by the Metropolitan Museum of Art, New York, in the purchase of the "Portrait of Alfonso d'Este" by Titian. This is one of two famous portraits known to have been made by Titian of the Duke of Ferrara. After having been lost to the world for many years it was brought to Paris during the year 1926, as an unknown work, from the chateau of the Comtesse de Vogue near Dijon. It was there purchased by a Munich dealer, from whom, in turn, it was acquired by the Metropolitan Museum in February, 1927. It is a magnificent work, worthy of the brush of the great master. The Museum also acquired during the year John Singer Sargent's beautiful

triple portrait, entitled "The Three Sisters."

The Museum of Fine Arts, in Boston, received as a gift from Robert Treat Paine, 2nd, a painting by El Greco, "St. Martin of Tours Dividing his Cloak with a Beggar"; and acquired by purchase another of this master's well-known works, "The Purification of the Temple."

Miscellaneous.—A celebrated portrait by Ingres, "Madame La Comtesse D'Haussonville," was purchased for inclusion in the Frick Collection of New York. Two extremely notable paintings were acquired during the year by the Detroit Institute of Arts—"The Man with the Flute" by Titian, presented to the Institute by the Detroit Museum of Art Founder's Society; and "Visitation of Saint Elizabeth," by Rembrandt.

Douglas Volk's portrait of Lincoln, entitled "With Malice Toward None," which was circulated among the schools of the country during the past season by the American Federation of Arts, was purchased and presented to the Sweat Art Museum of Portland, Maine, by Cyrus H. K. Curtis.

NECROLOGY

Among the well-known figures in the American art world who passed away during the year 1927 were Edward H. Potthast, N. A., who died in New York, March 10th; and Oliver Dennett Grover, A. N. A., whose death occurred in Chicago, February 14th. Both of these painters had achieved great distinction both at home and abroad, and are represented in many of our leading public and private collections.

SCULPTURE

BY RALPH FLINT

ART CRITIC, *Christian Science Monitor*

STATE OF THE PLASTIC ARTS

Limited Public Contact.—Of all the decorative arts, sculpture is perhaps the least easily accounted for in practice and performance. In so many cases, practitioners of the plastic arts are severely handicapped in

contracting a widespread audience by the very ponderability of their productions, and by the inability to secure finished works for public exhibition once they are permanently located. The sculpturing profession therefore comes less directly before

its critics than do the more mobile cohorts of painters, musicians, actors, etc. Many a fine piece of sculpture goes direct from the studio to its appointed pedestal or niche without so much as a single chance for preliminary contact with a critical public, an encounter usually adjudged beneficial to the cause of art and artist. And so, to call the gallery findings of any New York art year a complete document on the sculptural proceedings of that particular period in the United States is manifestly incorrect and perhaps unfair. Yet such a gleaning must often be conceded sufficient, as in the present case, since the intensive duties of a New York art critic do not permit much extra-territorial study of artistic monuments no matter how fine.

Exhibitions and Galleries.—Here then is the sculptural year of 1927 as set forth among the various exhibitions and galleries of Manhattan. Foremost among the annual fixtures the National Academy held Spring and Winter Exhibitions as usual in the Fine Arts Building, and as usual the sculpture was placed in uneven competition with the painting, both numerically and strategically. Here of course were the more academically inclined of the sculptors to be found, although such independently minded artists as William Zorach, Warren Wheelock, and Alfeo Faggi were exhibitors at the Spring session. Albert T. Stewart won the Ellin P. Speyer Prize on this occasion, among a field of competitors that included such well known sculptors as Harriet W. Frishmuth, F. G. R. Roth, Albin Polasek, Gertrude V. Whitney, Jo Davidson, Herbert Adams, Cecil Howard, A. St. L. Eberle, and Oronzio Mandarelli. The prize winners at the annual Winter Academy were Leo Lentelli, Margaret F. Cresson, and Eleanor Mellon. Hilda Gustafson-Lascari was another prominent contributor to this exhibition.

SCULPTURAL EVENTS

Oklahoma Tourney.—An interesting and somewhat unusual sculptural tourney, conducted by E. W. Marland

of Ponca City, Oklahoma, with the idea of securing a suitable figure to commemorate the pioneer women of Westward-Ho days, resulted in twelve prominent men accepting the invitation to compete. The dozen bronzes were first shown at the Reinhardt galleries, and visitors were asked to register their preferential opinions. The competitors were A. Sterling Calder, John Gregory, Bryant Baker, Jo Davidson, James Fraser, Mario Korbel, Arthur Lee, H. A. MacNeil, Maurice Sterne, Mahonri Young, and Wheeler Williams. The most stylized of the little bronzes, and the one, in my opinion, best suited to the exacting requirements of being enlarged to heroic proportions—the Pioneer Woman, to be erected in the open on the Cherokee Strip near Ponca City, the last public land to be opened to homesteaders—was the Sterne composition, in which a firm architectural verticality and a rigidity and simplicity of detail were stressed. Most of the models were sentimentally appealing, yet they seemed to further the illustrative idea to the exclusion of the real problem of the competition. The prize was awarded to Bryant Baker of New York. The final monument will cost approximately \$300,000, a third of which will go to the sculptor. The twelve models were exhibited in fourteen cities and seen by about 750,000 persons, of which some 123,000 cast votes for the winner. The total height of the monument will be about 50 feet.

Jennewein Exhibit.—One of the most striking one-man shows of the year was C. Paul Jennewein's at the Grand Central Galleries. This display, later shown at the Architectural League Exhibition in more effective surroundings, included his large polychromed sculptures and ornaments for the pediments and cornices of the new Philadelphia Art Museum. The effect of these colored figures at close range was somewhat overpowering, since the overlaying of gold and color appeared too summary; but of course that is all to be accounted for when the various pieces are installed at their proper elevation. The sculptor's use of color on some of his smaller figures was not

any too happy, since he has not the feeling for rich lacquered surfaces like the Russian Soudbinin, for example. He handles his vermilions and the like more as the toy-maker might, concerned only with a bright effect. He shines most in his more intimate, soft-toned pieces, such as his terra-cotta with intertwined amorini, or in the small bronzes of the "Cupid and Gazelle" type. The sculpturally heroic does not as yet appear to be Mr. Jennewein's most rewarding field of endeavor.

Nadelman Group.—Shortly after the Jennewein exhibition, came Elie Nadelman's startling group of sculptural sketches at Knoedler's. I wrote at the time that it was the most original and diverting exhibition of sculptural genius that has come to pass in many years. Out of the most trivial materials—plaster, paint, copper and silver leaf—the artist had modelled almost life-size figures all efflorescent in shimmering patina of rosy gold, all gay and beaming like some saucy troupe of troubadours making delicate mock of the pomposities of the *comédie humaine* and wholly indifferent to the captious retorts of the visitors who found them, for the most part, an irrelevant gesture on the sculptor's part. Against gray hangings this octet of oddly fashioned ladies and their sole male escort glowed like huge Cyprian images unearthed from some long, luster-giving sleep. While precious in one sense, these Nadelman figures possessed a surface splendor and a nobility of line that were fresh revelations of this brilliantly equipped sculptor's art. It was decidedly the season's gayest treat as to sculpture.

The Associated Dealers in American Paintings, Inc., held its first exhibition at the Anderson Galleries with a generous assortment of local sculpture to add to the fine effect of the paintings. Such well-known artists as LaChaise, Pratt, Derujinsky, Jennewein, Nadelman, Young, Whitney, Korbel, Beach, Diederich, Shonard, Quinn, Roth, Scudder, Calder, Borglum, McCartan, MacMonnies, Adams, and Fuchs were present.

Wheelock and Others.—Warren Wheelock, of the Woodstock colony,

appeared with both sculpture and paintings, at the Milch Galleries, and while he is undoubtedly talented in a variety of directions he wants that fine impetus that comes from well centralized devotion to the one particular phase of art. His wood-carved figures are always interesting, and he is at home with metals, too. Heinz Warnecke, a resident artist of St. Louis, appeared at the Milch Galleries with a variety of sculptural works, most appealing of which were his highly polished animal figures in metal. Among the outstanding exhibitors at the annual showing of the National Association of Women Painters and Sculptors were Margaret F. Cresson, Grace Johnson (a prize winner), Malvina Hoffman, H. K. Gustafson-Lascari (also awarded a prize) and Margaret L. Nilson. The forty-second annual exhibition of the Architectural League brought out a finer sense of decorative ensemble than ever before in its history, and the forecourt with the polychromed sculpture for the Philadelphia Art Museum by C. Paul Jennewein and the pediment figures by John Gregory for the same building was a striking scene. Other fine sculptural pieces were shown, bringing forward such artists as Leo Lentelli, Harriet Frishmuth, Gleb Derujinsky, Brenda Putnam, Gaetano Cecere (flagpole base for Plainfield, N. J., War Memorial), Charles H. Niehaus, Robert Aitken, Leo Friedlander (window pier figures for a Cleveland church) Chester Beach, and Joseph Pollia (Spanish-American War Memorial, Santiago, Cuba).

Gaston Lachaise exhibited at Alfred Steiglitz' Intimate Gallery. Here a genuine talent was seen in the cross-rip of many moods and manners, running now to over-stylized figures of modernistic patterning, and then easing away into highly naturalistic and appealing studies that make one wonder which is, after all, his real bent. He is master modeller whichever way he swings. A striking highly polished head of Mrs. Ernest Fiene and a small marble torso were his best numbers.

Freund and Others.—An amusing and unique artistic interlude oc-

curred in Karl Freund's large and exhaustive collection of sculpture dealing with the dog. Here the pieces ranged from earliest Chinese and Egyptian to most modernistic variations of this ever popular theme. Hunt Diederich's ironwork was a feature of the exhibition. R. Tait McKensie, who so cleverly interprets various phases of athletic life in his little bronzes, held a one-man show, which included models for the Percy D. Haughton Memorial and the Scottish Memorial at Edinburgh. At the annual Spring Salon Robert Laurent's alabaster group "Mother and Child" was an outstanding piece. The Milch Galleries held a garden show for the sculptors in May, and among those who were represented with appropriate work were Chester, Beach, Hunt Diederich, Lucy Perkins Ripley, Gleb Derujinsky, Mable Conkling, and Harriet Frishmuth. A group of New York sculptors was seen at the Brooklyn Museum the same month, with Robert Laurent, Duncan Ferguson, Concetta Scaviliogni, Dudley Talcott, Frank Reale, and J. Murman.

The Machine Age Exhibition brought out some new and interesting angles on sculpture, with many of the local sculptors working in harmony with their more advanced Euro-

pean cousins. Hunt Diederich's ironwork was a feature of this exhibition. The fine wood-carving exhibition at the Art Center was one of the important sculptural fixtures of the year. The annual soap-carving contest, under the auspices of Proctor and Gamble, was held, and already the fourth national contest in this unusual medium, with prizes totaling \$1,600, is announced.

Grand Central Galleries.—An important one-man exhibition of the year was Cyrus Dallin's, held at the Grand Central Galleries, from whose wide-flung repositories was sold a life-size replica of his "Appeal to the Great Spirit" to the Reading Museum, Reading, Pa. These same galleries, reaching a wider public than any other organization of its kind, also sold Brenda Putnam's "Young Faun" and Harriet Frishmuth's "Playdays" to the Dallas Museum, as well as Miss Frishmuth's famous "The Vine" to the Metropolitan Museum of Art in New York City. Daniel C. French's "Standing Lincoln" was acquired by the St. Louis Museum through the same source. Other artists holding one-man shows in New York were Dudley V. Talcott, Joseph M. Kratina, Wharton Esherick, and Mitchell Anderson.

ARCHITECTURE

BY HARRY FRANCIS CUNNINGHAM

ARCHITECT, NEW YORK; MEMBER, AMERICAN INSTITUTE OF ARCHITECTS

GENERAL

Trends and Developments.—We live in an age of marvels—and the repetition of marvels. And so very many wonderful things come into being almost daily, that the marvelous quickly becomes the commonplace and we grow so blasé as to scarcely realize that the apparently commonplace may be really quite marvelous after all. The buildings that house business and its many subdivisions are growing very tall (and often very ugly) and each is, in some way or another, more wonderful than any one of its predecessors has been. The

fine marbles, costly bronzes, imported stones of all sorts, crystal fixtures, whatnot, that line one's pathway to the elevators in a New York "skyscraper" strike a note of rich magnificence beyond which it would be difficult to go. Few State Capitols can boast an entrance as gorgeous as that of a certain "speculative" office building that one thinks of in Manhattan.

Use of Color.—Architects have begun to realize that color has something to do with architecture. Some of their efforts are a bit childish, a bit uncertain, but the effort is being

made to use color as an indispensable complement to form, and that is a cheering thing to note. Architects are beginning to realize that there are great possibilities for intelligent—and beautiful—design in electric-lighting fixtures. Those in the entrance and the lobbies of the French Building in Manhattan, for example, are well worthy of note.

High Buildings.—The heights to which buildings are soaring would startle an architect who retired from practice ten years ago—nay, even five years ago. The excessive cost of land in the desirable districts of the big cities contributes, of course, to this race for height. The very human, and particularly American, desire to outdo one's neighbor, contributes its share in this race. The almost general ugliness of these skyscrapers is due to many things. Partly it is due to the habit that architects seem so unwilling to lose, of trying to adapt ancient motives that belonged to small, quiet buildings, to the modern requirements of large, blatant structures. In other part this general ugliness is due to the fact that an "architect" has lately become a "thing defined by law"; and the only qualifications one must possess to practice (legally) the Mistress Art, are (1), A diploma (2), A knowledge as to the constituent parts of good concrete (3), A circle of wealthy and influential acquaintances (4), A certificate based upon the foregoing.

OUTSTANDING EVENTS

Medals Awarded.—The Gold Medal of the Architectural League of New York for 1927 was awarded to the Barclay-Vesey Telephone Building in New York, by Messrs. Voorhees, Gmelin and Walker, and this award was most richly deserved. This building is the outstanding example of commercial architecture that our age has produced. It is very American, and very remarkable. From the river, its silhouette is perfect. From "close-up" its detail is full of imagination and beauty. Its interiors are richer than those of any government building that one has ever seen anywhere. Its execution is flaw-

less. It is a real achievement! The Silver Medal of the Architectural League was awarded for "General Excellence" to the Bertram G. Goodhue Associates, who have carried on the uncompleted work of the late Bertram Grosvenor Goodhue, and who have undertaken many new works under their own names of Mayers, Murray and Phillip. The Medal for "Intimate Work" was awarded to Frank J. Forster, of New York, for his delightful residences.

Church Building.—There is a great activity in church building throughout the country, and it is especially remarkable in New York City. The Washington Cathedral (Messrs. Frohman, Robb and Little, of Boston) grows up, stone by stone, on its lovely site dominating the national capital from the northwest. The Cathedral of Saint John the Divine in New York (Ralph Adams Cram, of Boston) has made great progress. Lee Lawrie, who was awarded the American Institute of Architects Medal for Sculpture, is doing the important sculpture on Saint John. Nothing better could happen to this great cathedral than to have the collaboration of Lee Lawrie.

Mr. Medary, of Philadelphia, has just done a charming church group (Saint Andrew's) near Philadelphia. Messrs. Mayers, Murray and Phillip of New York have made great progress with their Church of the Heavenly Rest and Chapel of the Beloved Disciple. This building is really the first American expression of the Gothic spirit that is at once actually American and modern, and truly Gothic. It is true masonry construction (and therefore truly Gothic) although its frame is of reinforced concrete, and it is really American in that it is no slavish "copy" of some particular product of some particular bygone day. It is full of color in the interior, as the old Gothic buildings were and as all buildings always should be. The Chapel of the University of Chicago, by this same firm, is equally worthy of note.

Utility Buildings.—In the South, a Light and Power building in Birmingham stands out more or less

prominently, although it is obviously a copy (in mass and detail) of the design for the Chicago Tribune Tower by the late Mr. Goodhue. A telephone building in San Francisco, excited considerable comment which would have been well deserved were it not for the deplorable fact that this telephone building is a very obvious copy of the Saarinen design for the same Chicago Tribune Tower. It is of course true that all architecture must be based (at least in principle) upon what has come to us through the centuries. It is likewise true enough that one architect's steps are often inspired and (at least in part) directed, by those steps some other architect has taken. But it is very, very questionable—this obvious copying of definite steps by those who did not first take the steps. And it indicates a "mental laziness" that is not very encouraging.

Milwaukee Competition.—If one were to judge the progress of American architecture by the competition for the Milwaukee County Court House awards, one would say, perforce, that American architecture had been most thoroughly dead for at least fifteen years. Here was an almost unique opportunity for a true "Architecture of Democracy" to find expression. A city without any artistic tradition whatsoever; a city which has been noted for originality in at least some directions; a problem that was unique in many ways; and awards that were as uninspired and commonplace as one could possibly imagine. The First Prize was of the "style" of some fifteen years ago—the "style" of many columns that conspire between them to use up floor space and shut out light and air. The other prizes were of the sort that might have been premeditated by careless juries in Beaux Arts Competitions of the days before the Great War. The original conceptions that really expressed the city and that really met the conditions were, without exception, in the neglected class.

WAR MEMORIALS

A group of memorials to the American Army, erected or being erected in various European cemeteries and on

various French battlefields (designed without exception so far as one knows, by men who were not of the A. E. F.!) would serve equally well as memorials to the spirit of classic Greece, in that there is nothing American about any one of them (unless it be the inscriptions, which one assumes to be in English) and there is very much of Ancient Greece about all but one of them. The one design that evaded Grecian influence is in a well-known style that is French enough, and, therefore, fits its site (which the others do not), but it is still not American in the least, and all of them are about as far from real expressions of the American spirit of 1917-18 as the copy books could make them.

MISCELLANEOUS

Raymond Hood's Radiator Building for London (England) is a "thing of beauty and a joy forever." The same black and gold and color harmony that distinguishes the New York Radiator Building, by this same gifted architect, will remind the Londoner that imagination is just as lively in "the States" as he used to be taught to believe. This remarkable building has something curiously English about it and therefore belongs where it is going—but it has also a very American individuality that does much to prove that architecture in America is very much alive.

A most interesting little School Community is being created in Cranbrook, Michigan, by that Mr. Booth who started life as an architect and later came to own many newspapers. The School Group itself is the work of Eliel Saarinen, the Finnish architect who received second prize in the Tribune Tower Competition, and is a most interesting thing. The church (which has attained almost to the size and cost of a cathedral) is the work of Messrs. Mayers, Murray and Phillip of New York. Mr. Magonigle's Liberty Memorial in Kansas City is "coming along" and tended to prove at one time during 1927 how vain a thing is "Liberty," in that the architect's liberty to choose his collaborating sculptors was almost

denied him. If "Liberty" is eventually not so vain a thing after all, and this talented architect may be allowed enough of it to complete his memorial as he intends, it will take rank in the forefront of American architectural achievements.

PUBLICATIONS

Books.—There has been an unusual dearth of books that have a special interest for architects, from American presses. One wonders whether this is because architects do not read (and therefore do not buy), or whether it is because they do not write. One can recall only one particularly interesting book that has appeared during 1927 (and that has a general interest as well as an architectural one). *Manhattan, the Magical Island*, by Ben J. Lubschez (Press of the American Institute of Architects), is a most remarkable series of beautiful pictures of New York City and its surroundings. One discovers in its pages that Manhattan has its charming spots, its unexpected and beautiful surprises, just as any old world city has. One finds masses and silhouettes just as imposing, just as intriguing as those of Babylon or Egypt.

Magazines.—The architectural magazines show some improvement. The *Record* has adopted a new format and new paper and has become a very distinguished bit of printing. The

Architect has an inspired article now and then, always carefully tucked away so as to be almost difficult to find. The *Western Architect* has some fine critiques by Arthur North, offset—unfortunately—by a series of very terrible and very un-American color plates called "An American Architecture." The *American Architect* has an experienced and capable editor, and should be more interesting than it is. The *Architecture* (Scribner's) has changed its editor and its appearance, and has multiplied the number of its illustrations. It is a distinguished publication. All of them have far too many pictures of "copies-of-copies" and therefore are—to this writer's thinking—a negative influence in the development of real architecture.

The most unfortunate thing that could possibly have happened to the literature of architecture occurred when Charles Harris Whitaker gave up the editorship of the *Journal of the American Institute of Architects*. This distinguished editor has worked for many years with an idea and had created a magazine that was unique in its field—a magazine that was responsible, more than any other one thing, for the progress, at least the intellectual progress, that American architecture has made during the past fifteen years—a magazine that was known and admired all over Europe.

MUSIC AND THE OPERA

BY CATHERINE SMITH

MUSIC CRITIC AND LECTURER, BOSTON

THE BEETHOVEN CENTENARY

The year 1927 was given over in large measure to a commemoration of the hundredth anniversary of the death of Ludwig van Beethoven. In the United States, as in the rest of the world, elaborate programs of the master's works, a multitude of concerts, extensive radio broadcasting, excellent recordings of the symphonies and quartets by phonograph companies here and abroad, significant bi-

ographies and critical studies of the composer and his music all lent a definite impetus to the musical season. Everywhere groups of amateur and professional musicians banded together for a Beethoven feast which reached its climax during the week of March 26, the day which completed the century since Beethoven's passing in Vienna.

The scope of the Beethoven programs cannot be over-emphasized. Everywhere one heard the great com-

poser's music. Every orchestra included his works in specially arranged programs. Choruses sang portions of the D minor Mass, if not the entire work. The string quartets were heard in notable performances. Libraries unearthed precious manuscripts and Beethoveniana, placing their material on display. The Metropolitan Opera House was the scene, on January 23, of a revival of "Fidelio." The Chicago Symphony Orchestra, led by Frederick Stock, gave a series of Beethoven programs which occurred at short intervals throughout the concert season, and which incorporated all the symphonies, five concertos, four overtures, an orchestral Polonaise, and the Overture and Grand Fugue. In Washington, D. C., the London String Quartet played the sixteen Beethoven Quartets in a group of concerts fostered by the Coolidge Foundation. The Minneapolis Symphony Orchestra disclosed such little-known works as the Trio for two oboes and English horn in C major, the Overture to King Stephen, Three Equale for four trombones, and an Elegiac Song for vocal quartet and strings.

The Boston Symphony Orchestra condensed the entire Beethoven celebration into seven programs, March 22-29. Large choruses from the Harvard Glee Club and from Radcliffe College, the London and the Lenox String Quartets, Harold Samuel, the noted English pianist, S. Foster Damon, the poet, and finally the famous English critic, Ernest Newman, shared in the programs. Symphonies, string quartets, the Missa Solemnis, a trio and a sonata, an ode by Damon, and a brilliant speech by Newman all found appropriate niches in one of the outstanding Beethoven celebrations of the entire country.

Of the many books published during the year, that by Oscar Sonneck, which shows us Beethoven in the estimation of his contemporaries, and Ernest Newman's psychological study of the composer present the newest angles of approach. Other valuable details may be found in W. J. Turner's "Beethoven: the Search for Reality."

SYMPHONY ORCHESTRAS

Some progress and much change marked symphonic developments. After fifteen years of leadership in Philadelphia, Leopold Stokowski, who has brought the orchestra to its present high position, has been obliged to leave his band for a year in order to recuperate and rest. In the podium where Stokowski customarily holds such temperamental sway, Fritz Reiner, leader of the Cincinnati Symphony Orchestra, will conduct the Philadelphians, at least during the early part of the season. Thereafter, various guest conductors will make brief stays.

Stokowski's absence is only a temporary one, yet it attracted almost as much attention and comment as did the more permanent retirement of Walter Damrosch, for many years the conductor of the New York Symphony Society. On his farewell program, Damrosch placed Beethoven's Ninth Symphony, and this concert on April 10 occasioned speeches and presentations. New York showered Dr. Damrosch with testimonial dinners and every manner of appreciative attention. He still retains his position as head of the powerful Juilliard Foundation, and is an important factor in musical affairs in the metropolis.

The difficulties of financing the St. Louis Symphony still hovered over the organization at the close of the 1926-1927 season, and Mr. Rudolph Ganz, who had weathered a panicky period the preceding year, apparently decided he had endured enough. He asked to be relieved from his position as conductor, and the orchestra which had risen to prominence under his direction lost an able, ambitious musician and leader. For the present season the directors have engaged a group of guest conductors as follows: Emil Oberhoffer, Eugene Goossens, Willem van Hoogstraten, Bernardino Molinari and Carl Schuricht.

The Philharmonic Orchestra of Los Angeles summoned Emil Oberhoffer, the former conductor of the Minneapolis Symphony Orchestra, to take the place left vacant by the death of Walter Henry Rothwell. Mr. Ober-

hoffer took up his work on the Pacific Coast early last spring, conducting his first concert in Los Angeles on March 24, 1927. This was an all Beethoven program in observance of the centenary marked two days later.

A stormy series of disputes between the Chicago Orchestra Association and the Chicago Musicians' Federation broke out near the close of the season in the spring. The President of the Federation gave out a statement to the newspapers on April 15 in which he predicted a disbandment at the end of the season. The musicians demanded an increase in salary which the association felt itself unable to grant. No compromise was reached and early in the summer, the men did disband. Finally, however, some outside funds were placed at the disposal of the orchestral association and on October 14, Frederick Stock opened the season with the regular series of symphony concerts. Whatever may or may not be said about Chicago, there is no gainsaying the liberality with which the business men assist music and the other arts in the city.

Ethel Leginska, by all odds the most prominent woman conductor in this country, has obeyed the familiar injunction, and gone West with various others. She is now the conductor of the Woman's Symphony Orchestra of Chicago, having received the position after a hazardous but exciting season in Boston, where she led the Boston Philharmonic through a season of some five concerts with varying success.

The trustees of the Boston Symphony Orchestra have extended their contract with Serge Koussevitzky for two seasons more. Under Mr. Koussevitzky's fiery and energetic abilities, the orchestra has prospered and extended its series of concerts. Its artistic standards have been raised to a level approaching that of the days before the war when, under Karl Mück, the Boston Symphony was accounted the finest in the world. The panegyrics with which New York and other centers of sophistication greeted the Boston players on their last visit during the autumn of

this year bear witness to the orchestra's tremendous advance.

Cleveland seems well content with Nikolai Sokoloff, who has built up the orchestra in that city. A five-year extension of Mr. Sokoloff's contract ensures his remaining with the band whose excellences he has shown the East on several visits.

An interesting and encouraging sign of the growth of musical consciousness in this country is the spread and popularity of summer concerts. The summer concert season at the Hollywood Bowl has become world famous. In this beautifully situated auditorium in the hills, audiences of thousands last summer heard concerts led by various visiting conductors, including Bruno Walter, Pietro Cimini, Vladimir Shavitz, Pierre Monteux, Modest Altschuler, Ossip Gabrilowitch, Adolf Tandler, Eugene Goossens, and Alfred Hertz.

On the Atlantic Coast, two thousand miles away, the Lewisohn Stadium in New York offered the splendid Stadium Concerts which attract such large numbers. There, during the past season, Willem van Hoogstraten was the conductor. Occasionally, Pierre Monteux and Frederick Stock took the baton, acting as guest conductors.

The "Pop" concerts are so long established in Boston that they are regarded as an indispensable part of the city's musical activity. This year, for the first time, Alfredo Casella, Italian composer, pianist and conductor, led these concerts, revitalizing them, and endowing them with new interest. He is scheduled to return for two seasons more.

In Rochester, in Detroit, in Seattle, in Denver and in countless other cities, fine orchestras are supported by an intelligent and discriminating public. Such firm-rooted, honest growth is heartening to see.

THE OPERA

Unusual activity characterized operatic affairs of the year. Perhaps the most noteworthy event occurred with the world première on February 17, at the Metropolitan Opera House, of "The King's Henchman," opera in three acts by Deems Taylor, libretto

by Edna St. Vincent Millay. This was the first opera by an American ever commissioned by the Metropolitan company, and it met with tremendous enthusiasm. It was one of the successes of the season, and a company was sent on tour with it early in the autumn. Calmer, more reasoned judgment has followed the excitement of the earlier performances. There is no question about the opera's significance. It holds an important position in contemporary worth in its construction. There are, however, spots of unevenness, even weakness in the work. This seems due, in some measure at least, to the awkwardnesses of the text, and to the unforceful dramatic development. The composer is at work on a second work which the Metropolitan has commissioned, and for this he himself has constructed the text.

Other events at the Metropolitan Opera House which aroused much comment were the presentation of Puccini's "Turandot" with Jeritza as the Princess, Galli-Curci's appearance as Violetta in "Traviata," performed January 5, the excellent revival of "Fidelio" on January 23, the well-managed revival of "Mignon," produced after an absence of nineteen years on March 10, and the mounting of Casella's choreographic comedy "La Giara" on March 19. The revival in the autumn of Bellini's "Norma" with the beautiful Rosa Ponselle in the leading rôle resulted in so much enthusiasm that some of the reviewers were nearly incoherent. So stirring was Miss Ponselle's new revelation of her abilities that she might well have been a newcomer to the Metropolitan, and repetitions have followed the production on November 16, the first performance in New York since the season of 1891-1892. Chicago, however, had seen a revival in 1922 when Raisa sang the part of Norma. By contrast, the reception accorded an early opera of Korngold's, "Violanta," with the formerly idolized Maria Jeritza in the leading part, was apparently not a rousing one.

Plans are well under way for a new opera house to shelter and to some extent, at least, support the Metro-

politan company. Benjamin Wistar Morris and Mr. Joseph Urban have been entrusted with the plans for the new building, to be situated, probably, on Fifty-seventh Street, between Eighth and Ninth Avenue. The structure, to be ready for the season 1929-1930, is to contain studios which are expected to help carry the cost of the operatic productions. The tentative plans, announced a short while past, give indication of a practical and beautiful building.

From Chicago, where the Chicago Civic Opera Company enjoys a constantly increasing influence, come similar plans for a new "operatic temple," which, according to Mr. Samuel Insull, president of the association, will be twenty-two stories high and will require fifteen millions for building. At any rate, the Chicago company's record of operatic achievement in the past year is an excellent one. In December, 1926, it gave the world première of Charles Wakefield Cadman's opera, set to a libretto by Nellie Richmond Eberhart, "A Witch of Salem." The period dealt with is that of Puritan New England, and Mr. Cadman is said to have achieved some excellent effects in his work. On New Year's Eve, an important revival held that stage. "Don Giovanni," scintillant score of Mozart's, was given a sprightly new operatic dress. Modernistic settings, intelligent cutting and rearrangement of scenes, and a cast headed by Raisa, Mason and Schipa emphasized the importance of the production.

With Mary Garden in full sway as the scheming heroine, the American première of Honegger's "Judith" occurred. Vital and graphic though the music be, the work is generally accounted a better oratorio than an opera. A revival this fall came with the performance of Catalani's "Loreley," unheard in Chicago for thirteen years, and mounted on November 15 with Claudia Muzio as the soprano star, and with Giorgio Polacco conducting.

The Chicago Civic Opera Company, like the Metropolitan, sends a repertory on tour to the principal cities within reasonable distance. In addition to these sumptuous productions,

a few lesser operatic organizations make the rounds of the various cities, taking to them a standard repertory and moderately good performances. The San Carlo Company journeys in all directions, and in the course of the season passes through cities as widely separated as Boston, Miami, New Orleans and Los Angeles. A similar organization, of lesser dimensions perhaps, is the Manhattan Opera Company, which covers territory in the South and the West. Its principal novelty last year was a brief opera, "Namiko San," by its conductor, Aldo Franchetti. Chaliapine's "Barber of Seville" company also went on tour during the year.

Sporadic opera performances spring up in many cities, fostered by local organizations. Even if these lack the polish and finish of the largest productions, they do serve to familiarize people with the music and to arouse interest in opera. Philadelphia, for example, in addition to the regular season of opera by the Metropolitan company houses a Philadelphia-La Scala company as well as the Philadelphia Civic Opera Company. The principal achievement of the latter group during the past year was a performance of De Falla's "El Amor Brujo" and the American premiere of Erich Korngold's "Der Ring des Polykrates," an early and short work of no startling importance. In New York, on the other hand, a thoroughly amusing opera by Mozart, "La Finta Giardinera," was given its first American performance by a group of young singers at the Mayfair Theatre in January. In many cities such as Seattle, Washington, Memphis, Tennessee, and Washington, D. C., small but active groups foster opera performances. In Cincinnati, Chicago and St. Louis there is a season of summer opera which draws large audiences.

EASTMAN SCHOOL OF MUSIC

A development quite apart from usual trends has resulted from the opera training given at the Eastman School of Music. From the young people trained at the school, the Rochester American Opera Company has been formed. This is not simply

another second-rate opera company. It does not attempt to compete with the lavish productions of large companies. It does not even keep the standard versions of the routine operas. It uses operas cut to fit a small company, simple settings and sensible stage business. Useless frippery is stripped away, even though operatic convention demands it. All the texts are translated into easy natural English. Large, cumbersome choruses are done away with as much as possible, and as a consequence the dramatic developments evolve much more clearly than is customary. If this is modernism, then it is a singularly guileless modernism, and very convenient. Simplicity and unaffectedness are the chief characteristics of the manner in which all the operas in the repertory of the little company are performed.

In April, Vladimir Rosing, who is the director, took his company to the Guild Theatre in New York. Eugene Goossens conducted the performances. Mozart's "Escape from the Seraglio," Puccini's "Madame Butterfly," and Mozart's "Figaro" served to deploy to Metropolitan audiences the results of the work at Rochester. During the summer, the company played at the Stillington Theatre in Gloucester, drawing distinguished audiences to its vigorous and rejuvenated "Faust," "Pagliacci," "Figaro," "Seraglio" and "Martha." The young players are to essay another season of New York performances in January, 1928, when their "intimate form of operatic presentation" will infuse a fresh naiveté into the musical season.

AMERICAN COMPOSERS

Rochester has developed not only the American Opera Company and its charming innovations, but it has also become a sort of clearing house for the compositions of young American writers. Howard Hanson, director of the Eastman School of Music in that city, has a Little Symphony which presents the works of American composers. For larger symphonic works, the Rochester Philharmonic Orchestra is available, and there are also occasional performances of choral works

MUSIC AND THE OPERA

and stage music. American composers may submit works which will be given performance if found worthwhile.

More and more, orchestras throughout the country seek new works of value to present at concerts. The array of American compositions played during the past year is a very long one. Of course the recognized and established American composers hold prominent place. Deems Taylor, John Alden Carpenter, Edward Burlingame Hill, Howard Hanson, Ernest Schelling, Frederick Converse and Charles Wakefield Cadman are all familiar to an increasingly large public. Newer names are those of Emerson Whithorne, Roger Sessions, Aaron Copland, Henry Eichheim, and Eric De Lamarter. A host of unfamiliar names fill the nooks and crannies of symphony programs all over the country.

It is not to be expected that every work played by an orchestra is a masterpiece. It is no more a work of genius because it is by an American than it is necessarily a failure for the same reason. But the fact that there is an ever-increasing production of orchestral music which is deemed worthy a hearing by the public is an encouraging feature of American musical growth. Best of all, however, is the growing tendency of composers to use native material, choosing subjects which are germane to our national life. Edward Burlingame Hill's newest work, "Lilacs," was chosen because Professor Hill found Amy Lowell's poem of that name so altogether breathing of New England. Frederick Converse, in one of the most talked of compositions of the year, "Flivver 10,000,000," unearthed a topic to which no American can have remained oblivious. Emerson Whithorne's "New York Days and Nights" is another relevant instance.

CHAMBER MUSIC

Chamber Music has advanced within the past few years almost incredibly. In no small measure this growth is due to the remarkable series of concerts which Mrs. Elizabeth Sprague Coolidge has given to many sections of the country. New

York, Chicago, Los Angeles, Washington, Boston and many colleges have been given concerts by the finest string quartets obtainable. This year, Mrs. Coolidge has even sent her players to various European cities, reversing the old established custom of music emanating from Europe and coming to America. That the public had but to hear really fine chamber music to respond to it has been shown by the tremendous audiences which come to the concerts of music which, five years ago, would have been considered undeniably "highbrow."

RADIO BROADCASTING

The radio broadcasting, which all serious musicians scorned only a few years ago, has aroused an interest in music and performers much greater than had existed previously. Singers and players have found it a wedge to public appearances, and it has served at least as an outlet for hundreds of musicians of commendable though not startling talents. Whether the radio has fostered interest in music or whether music has generated interest in the radio is a question which need not be discussed here, but the fact remains that, when the Atwater Kent Company began their radio contests, thousands of young singers sought the auditions which led a small number to the coveted prizes and notice.

With the adjustments proposed by the Radio Commission it seems altogether probable that the general character of the broadcasting will be raised. It only remains for the stations to realize that less music and fine music is preferable to a constant production of mediocre matter.

MUSICAL EDUCATION

In addition to the thousands of individual teachers of music, there are hundreds of well established schools of music which draw pupils from every class. The most promising tendency among these schools, which have differed so widely in the past, is the attempt to reach some standard of attainment which should do away with the confusion hitherto existing. In February the National

Association of Schools of Music and the Allied Arts recommended a standard which should determine the awarding to the degrees of Bachelor of Music and Master of Music.

Superseding some of the older conservatories are the two newest and most generously endowed music schools in the country, the Juilliard Foundation and the Curtis Institute of Music. After a period of rather stormy criticism, the Juilliard Foundation reorganized its existing administration during the past summer. John Erskine was made chairman of the Administration Committee, and the work was divided into three lines of endeavor. The Graduate School, with Ernest Hutcheson as Dean, receives the most advanced students. The Juilliard School of Music is governed by the committee of which Mr. Erskine is chairman. The third, and very significant change, is the establishment of a department of extension or field work. Heading this new work which can reach every part of the country is Dr. Philip Greeley Clapp, formerly head of the music department of the State University of Iowa. Dr. Frank Damrosch continues to guide the general policies of the School.

The Curtis Institute in Philadelphia has recently secured Josef Hofmann, the pianist, as director-in-chief. Mrs. Mary Louise Curtis Bok, the president and founder of the school, has raised the endowment to \$12,500,000 and provision has been made for the financing of needy students. The distinguished faculty of

the school and the numerous opportunities available to its students have brought it much attention.

But music education is by no means confined to schools. The colleges and universities of course expand their music departments, but far more apt in reaching large numbers of adults is the work of libraries and the university extension departments of many states. The work of librarians who organize reference material to be used in connection with symphony orchestra programs, who arrange for lectures to set forth characteristics of composers and their music, and who stimulate interest in music of all kinds by displays of programs, scores and expository books is inestimable. In various parts of the country, librarians have been alert to their opportunities. One of the most thorough systems has been evolved by Richard G. Appel, music librarian of the Boston Public Library, where scores and references are prepared before each symphony concert, a lecture given on the concert itself, and where a season of opera receives similar public preparation. This work is carried on in conjunction with the State Department of University Extension.

Young People's Concerts, where boys and girls may assimilate music gradually and understandingly, radio talks to reach older listeners, the organization of choruses and orchestras and bands in schools everywhere are combining to produce young men and women to whom music has a definitely pleasant meaning.

THE THEATRE

By J. BROOKS ATKINSON

WRITER AND DRAMATIC CRITIC, *The New York Times*

GENERAL CONDITIONS

Cost of Production and Competition.—Although the ruinous cost of productions, the high rentals of theatres and the competition of moving pictures and vaudeville seem every day to spell the end of the theatre, Broadway still manages to put on about 300 plays a year and to succeed financially with about 100. In spite

of repeated assertions that Broadway has too many playhouses—about 75 devoted to legitimate attractions—several new playhouses are opened every year; it is likely that the number will be 100 before many more years are past. Throughout the country the number of houses devoted to legitimate attractions is steadily smaller. Apparently the plays found

suitable to New York audiences are not well liked in the rest of the country where popular stars, like George Arliss, are most successful as individuals.

Road Business.—Statistics compiled early in the year prove that the road business has fallen off tremendously during the last fifteen years. Nearly 1000 "little theatres" throughout the country provide drama locally, for the most part plays that have been successful a year or two earlier on Broadway. But rivalry for the control of legitimate theatres on the road goes on as keenly as ever, apparently not for charity but for profit.

Changes Analyzed.—With impressive statistics constantly quoted to prove on the one hand that the theatrical business is dying, and on the other that it is flourishing, those interested in the theatre are likely to conclude that conditions are changing but the theatre is essentially far from dead. If losses are heavier than ever, profits are greater than ever; and there seems to be no lack of producers willing to accept the responsibilities. Perhaps the chief result of changing conditions is to sharpen the distinction between failures and successes. The plays which stimulate only moderate interest in the theatre-going public are now usually taken off at once. Most producers are not willing to fuss with plays on the financial border line. This probably explains the preponderance of plays on sensational topics, and the lack of interest in gentle and tenderly romantic themes.

CENSORSHIP

The Play Jury.—In New York the public play jury check upon indecent drama has been found inadequate. Early in the year the District Attorney proceeded officially against several plays, and succeeded in closing by one means or another *The Captive*, translated from the French of Edouard Bourdet, after a run of several months; *Sex*, which had had a long run, and *The Virgin Man*, which was on the point of closing for lack of patronage. Later in the season *The Command to Love*, a brisk

farce, and *Women Go on Forever*, a strong drama, were willing to alter their lines and situations to avoid indictment by the authorities. The campaign against indecent drama resulted chiefly in legislation which provided for a year's "padlock" on any theatre housing an indecent attraction. The new law, which was never put into practice, shifted the immediate responsibility from the producer to the owner of the theatre.

GOVERNMENT ACTION AGAINST BROKERS

Tax Case.—Late in the spring the United States Government proceeded against several ticket brokers who were not paying the lawful excess tax on tickets sold above the usual fifty-cent broker's fee. In the rather sensational investigation that followed, the practices of producers, box-office men and brokers were found intricate, to put it mildly. In some cases the producers and the box-office men sold their tickets to brokers at a premium above the box-office rate and shared in the spoils. Theatre ticket agencies in several prominent social clubs were summoned for pertinent testimony about sharp business practices. Although all the brokers indicted promised to reform their business arrangements to avoid penal sentence, one or two of them were later indicted for the same offense; and theatregoers who were willing to pay high premiums for their tickets usually found a way to get what they wanted.

Box-office rates are now very high; with one or two exceptions the lowest price for dramatic entertainments is \$3.30, while \$4.40 and \$5.50 is usual for those most in demand. For musical plays the rates run as high as \$7.70 for the best seats for Saturday evening performances. Apparently high prices do not keep people away from the entertainments they are bent upon seeing.

MELODRAMA

Outstanding Plays.—Following the great success of *Broadway*, a melodrama of cabaret life put on in 1926, melodrama had things pretty much its own way all during the season.

Chicago, by Maurine Watkins, a new playwright, made a sort of melodramatic farce of popular hysteria over murderesses in general, and one in particular. *The Barker*, by Kenyon Nicholson, a Columbia instructor, made a picturesque melodrama of life in the travelling tent show of the West. Jed Harris, producer of *Broadway*, applied the same whirling methods to *Spread Eagle*, a melodrama of a postulated American invasion of Mexico caused by chicanery in American big business. *The Spider* gave a new twist to blood-and-thunder melodrama by planting some of the action in the orchestra seats. *Crime* represented a hold-up on the stage. *The Trial of Mary Dugan* dispensed with the curtain and treated the audience as if it were a jury. *Revelry*, which proved to be unsuccessful, was a melodramatic stage version of Samuel Hopkins Adams's sensational novel of the Harding administration.

Technique.—Most of these melodramas employed a looser play technique than the traditional three-act well-built drama. They relied upon acting and stage directing as much as they did upon the author's script, and they got their effects in the theatre rather than upon paper. Most critics of the drama believed that the new technique was more legitimately "theatre" than the common fare of playwrighting, and hoped to see this new ingenuity applied to finer dramas.

It is never safe to herald any movement in the theatre as new; generally the same technique turns up somewhere in Shakespeare. But the breaking away from the tightly-constricted play forms of the first part of the century seemed new to those accustomed to Pinero, Brieux, Henry Arthur Jones and that school.

Hopkins and Galsworthy.—One of the early successes of the fall season was *Burlesque*, produced and partly written by Arthur Hopkins. As its title indicates it told a story of backstage life on the burlesque circuits, and this time the story was not melodrama but sentiment. The play concluded with a few numbers of a burlesque entertainment; the hero and heroine renewed their pledges of

devotion during a "hoofing" number before the curtain. John Galsworthy's *Escape* was more in the form of panorama than symmetrical drama. In several scenes it followed a convict's attempt to escape from prison; it was chiefly concerned with the attitude towards escaped convicts of different types of English men and women. Mr. Galsworthy had already announced *Escape* as his last play.

Paul Green.—The Pulitzer Prize went to *In Abraham's Bosom*, a negro play by Paul Green, a teacher in the University of North Carolina, previously known as the author of many one-act plays. *In Abraham's Bosom* employed the episodic form of separate scenes, comprising the biography of a Southern negro who tried to rise above the common life of his people. Although it remained on the boards, both downtown in Greenwich Village, and half way uptown at the Garrick Theatre, it was not a popular play. In the autumn it was revived again with more success, and finally sent on the road. Another full length play by the same author, *The Field God*, was put on rather unsuccessfully at the Greenwich Village Theatre. Both of the plays were tragedies and folk lore.

Heyward.—Another negro play, *Porgy*, was put on by the Theatre Guild with a cast of negroes; it was generally well liked. Dramatized by Du Bose Heyward, a Southern poet, and his wife, from Mr. Heyward's novel, it was played with mass movements and many novel scenic effects; and it brought into favor a new stage director from abroad, Rouben Mamoulian.

HIGH LIGHTS IN DRAMA

"Coquette."—One of the most popular plays of the year was *Coquette*, with Helen Hayes in the leading part. It was put on by Jed Harris, producer of *Broadway*, and written by Ann Preston Bridgers in collaboration with George Abbott, who was one of the authors of *Broadway*. *Coquette* told the tragedy of a Southern girl who fell in love with a rough young man from the hills and gave herself to him. Whereupon her father killed him. The interest of

Coquette, however, was less in the story than in the beautiful acting of every person in the cast, particularly of Miss Hayes and Elliot Cabot. It represented acting technique applied to a drama of exquisite character and beauty.

"*Saturday's Children*," by Maxwell Anderson, one of the authors of *What Price Glory?*, revealed Ruth Gordon as an actress of unusual charm and softness. Produced by what was left of the former Actors' Theatre, directed beautifully by Guthrie McClintie, *Saturday's Children* relieved the minds of those who thought the theatre offensively vulgar and it endured as one of the spectacular successes of the season. It was the story of two young people who had married before their income was sufficient to support a family, and it illuminated a common situation in contemporary life.

"*Pickwick*."—Another interesting production was a stage version of *Pickwick*, produced by a lover of Dickens, Frank C. Reilly. Although the costuming and the staging were painstakingly true, and the script taken almost bodily from Dickens, the production was a costly failure. Audiences accustomed to the excitement of melodramas were apparently impatient with the slower movement of a literary play.

"*The Road to Rome*," by Robert Sherwood, editor of *Life*, made a salty farce of Hannibal's march on Rome. By putting modern manners and modern jokes in the flowing costumes of ancient Rome, Mr. Sherwood managed to turn his travesty into a popular success with Jane Cowl radiant in the leading part. Mr. Sherwood's dramatization of Ring Lardner's *The Love Nest*, a story of Hollywood life, was ragged, and the play was unrewarding save for June Walker's acting in the principal rôle.

"*Behold, the Bridegroom*."—At the end of the year, three uncommonly interesting plays came in succession, *Behold, the Bridegroom*, *Paris Bound* and *The Royal Family*. *Behold, the Bridegroom*, by George Kelly, who had won the Pulitzer Prize with *Craig's Wife*, revealed this serious young playwright passing from reper-

torial drama to analysis of character. His heroine, played brilliantly by Judith Anderson, was a grimly cynical young lady of high social position; she fell in love with an engaging young man who represented finer human emotions and ideals. *Behold, the Bridegroom* was a tense, introspective tragedy so unrelieved and verbose that many disliked it quite as much as others admired.

"*Paris Bound*" was a three act comedy of manners by Philip Barry, previously known for his charming, slightly whimsical and less successful *You and I*, *In a Garden* and *White Wings*. His historical drama entitled *John*, which unfolded the character of John the Baptist, had just failed ingloriously as the result of soft playwrighting and wretched acting. *Paris Bound*, produced by Arthur Hopkins with Madge Kennedy, Gilbert Emery and a generally excellent cast, showed how a happy marriage nearly collapsed on the rock of infidelity. It was remarkable for its construction and its light, fluffy humors; and those who had believed in Mr. Barry's talents for a long time rejoiced over his first indisputable success.

"*The Royal Family*," written in collaboration by Edna Ferber and George S. Kaufman, staged by Jed Harris with Haidee Wright as the leading player, was the satirical comedy of a family of popular American actors. Their absurdities, vanities and distresses whirled through three acts of neat dialogue and high-spirited humors.

FOREIGN PLAYS AND PLAYERS

Guity and Others.—As usual, New York played the host to many players from across the water. Early in the season Sacha Guity and his wife, Yvonne Printemps, great favorites in Paris, charmed New York playgoers with their dainty facility in *Mozart* and one or two other plays in French. In May the Spanish Art Theatre, under the direction of the prolific Martinez Sierra, made a brief visit with several plays in a Spanish repertory. They were highly esteemed for their acting, especially that of Catalina Barceña, and warmly praised;

out they were not successful. In the autumn, Angelo Musco, a Sicilian actor, had a long engagement at the Manhattan Opera House with several of his best dramas and his own company. The Argentinian troupe headed by Camila Quiroga had a brief repertory engagement in the same auditorium.

Reinhardt.—In November Max Reinhardt, the leading régisseur of the world, made another visit to New York, this time bringing a company from Berlin and Vienna, including Alexander Moissi, his most brilliant actor. Although Dr. Reinhardt inhabited the largest playhouse in New York, the Century, his first production of *A Midsummer Night's Dream*, in German, packed the house for two weeks and a half. *Jedermann* and *Danton's Tod*, spectacular and versatile, ran through the rest of the year.

Irish Players.—While Dr. Reinhardt was beginning his repertory, the Irish Players from the Abbey Theatre in Dublin made their second invasion in sixteen years. They began with *The Plough and the Stars*, by Sean O'Casey, foremost playwright of Ireland today, and they proposed to devote themselves entirely to plays by the same author. *The Plough and the Stars* was a strong, fervent drama of the Irish Revolution, notable for its glowing characterization of Dubliners of the lower classes. In Dublin it had been the occasion for a demonstration by hot-headed Irish patriots, and it was greeted with a few hisses in New York. For the most part it was admired for its strength and the warm charm of the acting. *Juno and the Paycock*, by the same hand, came next. But the Irish visitation was not successful financially.

"*Chauve-Souris*" came again under the direction of Morris Gest for a tour through the United States. Several previous visits had not exhausted New York's admiration for this unique and droll bundle of Russian humors. It had a good run.

MUSICAL PRODUCTIONS

"*Electra*."—Other interesting engagements for the season included a

performance of *Electra*, with Margaret Anglin in the leading rôle. Put on for a benefit run at the Metropolitan Opera House, it was revived again in the late season at the Gallo Theatre.

Gilbert and Sullivan.—Winthrop Ames, who had already distinguished himself with brilliant revivals of *Iolanthe* and *The Pirates of Penzance*, continued his Gilbert and Sullivan revivals with a splendid production of *The Mikado*. Popular interest in these British operettas seemed never to diminish. Late in the spring two other producers tried their hand at Gilbert and Sullivan with revivals of *Ruddigore* and *Patience*. They were obviously so inferior to the standards set by Mr. Ames that scarcely anybody went to see them.

Ziegfeld and White.—Musical entertainments persisted in all their splendor on many stages. Florenz Ziegfeld, in a new theatre bearing his own name, made a beautiful symphony of color of *Rio Rita*, a Mexican musical show that filled the playhouse week after week all through the season. *Manhattan Mary*, sponsored by George White, offered the humane and ingratiating fooleries of Ed Wynn in the midst of a charming musical entertainment.

"*Show Boat*."—At the end of the year Mr. Ziegfeld mounted what was hysterically acclaimed as "the best musical show ever written," *Show Boat*, dramatized by Oscar Hammerstein, II, from the popular novel by Edna Ferber, with a beautiful and ingenious score by Jerome Kern. Staged and acted with the sort of mastery of craftsmanship admired in Reinhardt, *Show Boat* began a long run, and proved that Mr. Ziegfeld's talents were not circumscribed by his annual *Follies* and his more conventional musical entertainments.

Other musical shows ran all the way from the jazz vivacity of *Good News* to the charming comedy of *Peggy Ann* and *The Connecticut Yankee*, all with rather more skill and imagination of producing than the usual dramas. Music, lyric writing, dancing, costuming, comedy were obviously improving steadily, and the infractions of good taste usual to

the musical stage were less frequent among the better productions. On the whole, it was apparent that the fashion was against nudity and indecency, although one could not say how soon the fashion would turn the other way again.

THE REPERTORY THEATRE

Eva Le Gallienne.—The experimental theatres, which had been notably ambitious and stimulating several years before, were passing through various phases. The most encouraging adventure was the establishment of repertory by Eva Le Gallienne at an old theatre in Fourteenth Street. Choosing plays of high literary and dramatic merit, and keeping the box-office prices low, Miss Le Gallienne's company became increasingly more popular as the season went on, and proved, what many people had believed, that good plays, well performed, at reasonable prices, were much in demand.

Miss Le Gallienne's repertory included Ibsen, Shakespeare, Chekhov, and several others. Her production of *Cradle Song*, by Martinez Sierra, was so beautiful and popular that Miss Le Gallienne had to exercise great restraint in refusing flattering offers to bring it to Broadway under profitable auspices. The autumn season began with a fine, searching tragedy, *The Good Hope*, translated from the Dutch of Herman Heijermans. In one season Miss Le Gallienne's company had become so firmly established that the future seemed to depend merely upon a continuance of the same policy and the same devotion to the best dramas.

The Theatre Guild, with about 2,100 subscribers, was certainly the most influential organization of its kind in the country. With a small group of regular actors, and with others recruited according to need, the Guild played repertory all through the season. For a few weeks in the autumn, while *Porgy* was being played in New York by a negro company, the Guild players made an extensive tour through the East. Their most popular play of the year was a light comedy entitled *The Second*

Man, by S. N. Behrman; it told the amusing story of a modish young writer, attractive personally, and his distresses over two women who wanted to marry him. *The Silver Cord* and *Ned McCobb's Daughter*, both written by Sidney Howard, opened in the late autumn and early winter of 1926, but held the stage through most of the spring. The Guild also revived Shaw's *The Doctor's Dilemma* and continued *Pygmalion* from the preceding season.

Eugene O'Neill.—Although no new plays by Eugene O'Neill were put on during the year, two were published, *Marco Millions* and *Lazarus Laughed*, and *Strange Interlude* was completed ready for early production by the Guild in 1928. All the new plays disclosed Mr. O'Neill pounding ahead with his thoughts and emotions, honestly indifferent to fixed patterns of play construction. *Marco Millions*, also to be produced in 1928 by the Guild, was the phantasy, ironic in its American implications, of Marco Polo's big business enterprises in China. Marco represented in all his complacency and callousness the modern Babbitt. *Lazarus Laughed* was heralded as Mr. O'Neill's affirmation of life. Based upon scriptural history, expressed through choruses and declamation, *Lazarus Laughed* trumpeted the Christian doctrine that there is no death. Being a costly drama to stage, it rested comfortably in bookform while the Provincetown Playhouse group sought funds with which to produce it.

The Neighborhood Playhouse, supported for more than a decade by Alice and Irene Lewisohn, suspended its activities at the close of the spring season. In the opinion of its sponsors it had gone as far as it could in the direction of perfecting group performances; they believed that its future would be merely a continuance of its generally conceded prowess. The Neighborhood company moved up town independently with its edition of the *Grand Street Follies* and played for several months. Reorganized as The Actor-Managers, the company was not successful with its production of Dunsany's *If* and Rob-

ert S. Sherwood's dramatization of *The Love Nest*.

The New Playwrights.—In a corner of Greenwich Village an organization known as The New Playwrights produced plays of a revolutionary nature. One of them, *The Belt*, by Paul Sifton, dramatized the condition of employees in the Ford automobile factory, and held the stage for several weeks. The New Playwrights had previously put on two original dramas at an uptown theatre.

SUMMARY

Although experimentation per se no longer had the vogue it had enjoyed five or ten years earlier, the theatre generally appeared to be in an active and interesting condition. If it lacked a large group of vigorous playwrights, it was developing directors steadily and it had a responsive audience. Good plays rarely died from lack of appreciation; most of the fatalities could be traced to faulty playwrighting, acting or stage direction.

MOTION PICTURES

BY MORDAUNT HALL

MOTION PICTURE CRITIC, *The New York Times*

THE SCREEN STAR

Diminishing Importance.—Although 1927 was not distinguished by any better pictures than were presented the previous year, it was a period during which an auspicious beginning was made toward diminishing the importance of the screen star. This was accomplished in some studios by the casting of inexperienced players in important rôles; the conspicuous instance of a girl proving herself to be a remarkable actress, or, at least, one who was genuinely sensitive to direction, was that of Janet Gaynor, whose work in the film conception of *Seventh Heaven* was of such marked excellence that she was chosen by F. W. Murnau, the famous German producer of *The Last Laugh*, to play the leading feminine rôle in *Sunrise*, his first picture to be made in this country.

Personality v. Theme.—It is evident that the film star is slipping from grace, which is due to performances of these players being so frequently stereotyped and also to the fact that there is so much bickering over the vehicle for the favorite that what was once a story turns out in picture form to be a series of compromise sequences with so-called characterization patterned on other shadow entertainments. Hence the film distributors and the theatre man-

agers have been brought to the realization that while featured players attract crowds with competent acting and a good story, they quickly lose their sway by artificial acting and a constant desire to call attention to their own pleasing appearance rather than to carry out the sequence of the narrative.

PROGRESS IN FILM ART

Characters and Settings.—Slowly, and sometimes perhaps too slowly, the picture producers are developing true psychology and logic in pictures; now and again there appeared a picture with characters of true flesh and blood whose intelligence was kept at the logical level. It was also gratifying to observe that the producers themselves are discouraging flashy settings, which has been brought about in a measure through the public becoming satiated with immense rooms and halls and lavish cabaret scenes. There still prevails, however, the regrettable tendency to follow the public rather than lead it. There were the fractious comic contraptions, meaningless and silly, which have proven enormous financial successes. The mere fact that these efforts elicited loud laughter where they were shown has inspired many such boisterous affairs. There were some good comedies, it is true, but, unfortunately, there was no series so delight-

ful as the comedies made years ago by the Sidney Drews.

Defects of Imitation.—The besetting sin of film producers is the constant imitation of the successful work of their confreres. There was, for instance, a plethora of college photo-plays, the denouement of all being virtually the same. Therefore, as in countless other films of the standardized variety, there was never a whit of suspense in these productions, not even in the individual episodes. Of these scholastic plays two were quite good, but in nearly all of them the characters were more often clowns than real, true-to-life human beings.

THEATRE PATRONAGE

Broadway Presentations.—Broadway, because of the extra theatres (including the Paramount, in Times Square, which opened in November, 1926, and the Roxy, which was opened in March, 1927), has seen in the defined theatrical area 314 pictures against a few more than 200 in recent previous years. This does not mean that the production of films increased during the twelve-month, but that the sponsors were enabled to present more of their productions in the limelight of Broadway than hitherto.

Public Discrimination.—A significant happening in the course of the year was created partly through mediocre films and the fact that expensive stage productions were offered at the Roxy and the Paramount. This resulted in a steady falling off in the attendance at the older houses. Hence, cinemas like the Capitol and the Mark Strand were impelled to follow the lead of the newer houses by offering vaudeville acts in conjunction with the film feature. Had the pictures been sufficiently worthy at the older houses they would have been able to hold their own with the Paramount and the Roxy, but actually the productions at the newer theatres were just as good as those at the other theatres, and frequently of higher standard. It was substantiated that the public favored good pictures in picture theatres when the majestic Roxy presented the film version of *What Price Glory*, for the

receipts soared to the unprecedented sum of \$146,000 in one week. This amount was not far from double the highest week at the Capitol and nearly twice the sum taken in at the Paramount, a smaller theatre than the Roxy by about 2,000 seats.

TRENDS AND TASTES

If one could successfully predict what is wanted in the coming year, it would be worth a fabulous sum of money. The so-called trend is bound to follow the theme of a financial success. Rowdy farces and college yarns having had their fling, it now remains for some picture with a new angle of interest to capture the attention. The picturization of Professor Erskine's satirical study, *The Private Life of Helen of Troy* (incidentally a very free rendition) was one of the few quasi satirical photo-plays launched in the year. Were it not for the fact that the producers fear for the failure of satire in the smaller communities, this style of subject might easily encourage a further delving into ancient history; but in the matter of satire there was the memorable flop of *Beggar on Horseback*. While *The Private Life of Helen of Troy* in film form did splendid business at theatres in the neighborhood of Times Square, the producers of this effort themselves were at the time of writing not at all optimistic regarding the results when it reached the provinces. Entertaining the millions is a great problem, for opposed to the financial failure of *Beggar on Horseback*, there was the encouraging success of the screen adaptation of Mark Twain's story *The Connecticut Yankee at the Court of King Arthur*.

OUTSTANDING FILMS

"Sunrise."—The outstanding pictures were as varied as usual. The most brilliant cinematic achievement was Mr. Murnau's *Sunrise*, which was based on Sudermann's novel, *A Trip to Tilsitt*. It was perhaps no better than *Variety*, but it rivalled that excellent German work. In the book Sudermann wrote a tragic ending, but Mr. Murnau gave the film a happy one. There were some critics who

disputed the psychology of *Sunrise*, but this decision was reached without sufficient study of the subject, for Mr. Murnau rounded out his characters and made their actions life-like.

Extravagant Tendencies.—Cecil B. DeMille's biblical production, *The King of Kings*, was on the whole a most impressive picture, weakened to some extent by extravagant tendencies—a showy introduction and the stressing of harrowing details. *The Way of All Flesh*, Emil Jannings's first film to be made in Hollywood, was another worthy subject, the principal fault of which was an overdose of sentiment in the latter chapters. In *Wings*, there were a number of amazing air battle scenes, but the narrative of this immensely popular production was a trifle too conventional.

"Chang" and "Seventh Heaven."—Merian Cooper and Ernest B. Schoedsack were responsible for *Chang*, an absorbing pictorial record of life in the Northern Siamese jungle. *Seventh Heaven*, a conversion of the play of the same name, was one of the few motion pictures that was said by many to be better than the play. It was a picture with no little charm and most competent acting.

Other Pictures.—A breezy comedy called *Service for Ladies*, directed with a bright sense of humor by H. D'Abbie D'Arrast, proved to be emphatically diverting. Then there was *Underworld*, a melodrama of the seamy side of Chicago life, which, while it had its exaggerated passages, was nevertheless directed with imagination and capably acted. The pictorial translation of Sir James M. Barrie's old play, *Quality Street*, was an earnest effort, something very refreshing. Karl Brown, the camera man who photographed many of the big scenes of *The Covered Wagon*, himself produced a trenchant film drama of Southern mountaineers. It was entitled *Stark Love*, and while its fine drama was vitiated somewhat by a moviesque flood in the final chapter, it was an instance wherein the producer set forth in his characters true human psychology.

Ernst Lubitsch's contribution was

a film idea of *Old Heidelberg*, which came to the screen as *The Student Prince*. It was produced in a skilful fashion but was wanting in the performances of the players who filled the juvenile rôles. *The Patent Leather Kid* was a picture that demonstrated that Richard Barthelmess, who for the past two years has given decidedly artificial performances to the screen, could, under expert direction, give a natural and easy portrayal. *The Jazz Singer*, in which there were Vitaphoned interpolations of Al Jolson rendering popular songs, was an entertainment of considerable merit, despite the fact that the story was frequently overburdened with sentiment. Paul Leni, producer of the German picture, *The Three Wax-works*, and the designer of the settings for *Variety*, revealed his talent as a cinematic artist in his direction of a version of the mystery play, *The Cat and the Canary*.

Love, as the pictorial transcription of Tolstoy's *Anna Karenina*, was called, was an admirable picture chiefly remarkable for the fascinating performance by the Swedish actress, Greta Garbo. She was supported by John Gilbert, and he proved to be too much of the conventional motion picture actor, and was by no means restrained in his characterization. It is a case of good entertainment which cannot be said to have caught much of the author's spirit. *Two Arabian Knights* was a subtle and substantial farce comedy wherein Louis Wolheim, the Captain Flagg in the play, *What Price Glory*, distinguished himself as a clever comedian. A Moscow Art Theatre Players picture, *Polikushka*, was a peculiarly interesting human document with a morbid finish.

The ambitious and costly German production, *Metropolis*, was a marvelous piece of work from a technical standpoint, but its story sprawled in three directions and became quite tedious and not at all satisfying. Douglas Fairbanks's *Gaucho*, was marred through the introduction of an extraneous and gruesome idea. A Ufa film, *Secrets of the Soul*, a psychoanalytical subject, was a welcome relief from the many monotonous sex

photoplays. The screen translation of *The Potters*, J. P. McEvoy's play, turned out to be a pleasing entertainment, but it hardly moved with the plausibility or the smoothness of the stage work.

Other satisfactory subjects were *The Rough Riders*, and Alexander Korda's foreign film, *Madame Wants No Children*.

SYNCHRONIZATION

The Movietone.—William Fox, who acquired the controlling interest in the Roxy Theatre, soon after it opened, during an interview at the time predicted that the next five years would bring about a great change in motion pictures. He said that the screen contributions of the present day would be as far behind the future productions as those of a decade ago were behind the films of 1927. He stressed the strides made by the synchronization of sound with animated screen images and declared that he intended producing with his Movietone news reel subjects combined with sound. Subsequently he proved that this could be done by presenting such features as the Prince of Wales talking before a throng; Lloyd George making an address; Mussolini being introduced by the American Ambassador to Italy and then Mussolini delivering a speech to an audience in a New York Theatre. There were a number of others, including the taking-off of Colonel Lindbergh on his flight from New York to Paris; the reception of Lindbergh in Mexico City; the departure of General Lejeune and a contingent of United States Marines for Nicaragua.

The Vitaphone.—It is Mr. Fox's intention to use the Movietone to make a talking photoplay. The Warner Brothers have been eminently successful in some instances with the combining of vocal renditions with pictorial images by means of their Vitaphone, and the nearest approach to talking photoplays were some of

the features with dialogues presented by Messrs. Warner. The Movietone, however, has the advantage over the Vitaphone, in that the sound is photographed on the film at the time of taking the image. The Vitaphone relies on wax discs to record the sound, and is therefore at present not practical for use outside a studio. The Movietone, however, employs the Vitaphone method of loud speakers for delivering the sound to the theatre and audiences.

Producers' Attitude.—Prior to the Vitaphone presentations, the motion picture producers were very cold toward the synchronization of sound with pictures; but since then the same men who discouraged the inventions or devices have taken to the idea with the result that this year there will probably be four or five different talking-picture devices on the market.

FINANCIAL ADJUSTMENT

Fairbanks's Statement.—As president of the Motion Picture Academy of Arts and Sciences, Douglas Fairbanks predicted that 1928 will be a year in which the producers will seriously enter upon a period of financial re-adjustment so as to get down to a healthy business basis. He said that he believed that the industry needed a thorough housecleaning and that in many instances salaries were out of proportion and that the cost sheets of production revealed almost wanton wastage. Mr. Fairbanks added that he would like to see more pictures made abroad and that, because of foreign legislative bodies encouraging their own national production, he thought that a new impetus will be evident in the producing of films in other countries by American concerns.

"We have," observed Mr. Fairbanks, "French, English and German literature and art that reaches to the far corners of the world; why should not motion pictures become another of their art forms?"

COGNATE SOCIETIES

- AMERICAN ACADEMY IN ROME.—101 Park Ave., New York, N. Y.
- AMERICAN CERAMIC SOCIETY.—Lord Hall, Ohio State University, Columbus, O.
- AMERICAN FEDERATION OF ARTS.—1741 New York Ave., Washington, D. C.
- AMERICAN FINE ARTS SOCIETY.—215 W. 57th St., New York, N. Y.
- AMERICAN INSTITUTE OF ARCHITECTS.—101 Park Ave., New York, N. Y.
- AMERICAN NUMISMATIC SOCIETY.—156th St. and Broadway, New York, N. Y.
- AMERICAN SCENIC AND HISTORIC PRESERVATION SOCIETY.—154 Nassau St., New York, N. Y.
- AMERICAN WATER COLOR SOCIETY.—215 W. 57th St., New York, N. Y.
- ARCHAEOLOGICAL INSTITUTE OF AMERICA.—New York University, New York, N. Y.
- ARCHITECTURAL LEAGUE OF NEW YORK.—215 W. 57th St., New York, N. Y.
- ART ALLIANCE OF AMERICA.—65 E. 56th St., New York, N. Y.
- ART CENTER, INC.—65 E. 56th St., New York, N. Y.
- ART STUDENTS' LEAGUE OF NEW YORK.—215 W. 57th St., New York, N. Y.
- ARTISTS' GUILD.—2 E. 23rd St., New York, N. Y.
- FINE ARTS FEDERATION OF NEW YORK.—215 W. 57th St., New York, N. Y.
- GRAPHIC ARTS BOARD OF TRADE.—291 Broadway, New York, N. Y.
- GUILD OF FREE LANCE ARTISTS.—22 E. 17th St., New York, N. Y.
- INDEPENDENT ARTISTS' SOCIETY.—1947 Broadway, New York, N. Y.
- METROPOLITAN ART ASSOCIATION.—489 Park Ave., New York, N. Y.
- MUNICIPAL ART SOCIETY OF NEW YORK.—119 E. 19th St., New York, N. Y.
- NATIONAL ACADEMY OF DESIGN.—175 W. 109th St., New York, N. Y.
- NATIONAL SCULPTURE SOCIETY.—215 W. 57th St., New York, N. Y.
- NEW YORK SOCIETY OF ARCHITECTS.—29 W. 39th St., New York, N. Y.
- NEW YORK SOCIETY OF CRAFTSMEN.—65 E. 56th St., New York, N. Y.
- NUMISMATIC SOCIETY OF AMERICA.—156th St. & Broadway, New York, N. Y.
- SCHOOL ART LEAGUE.—599 Fifth Ave., New York, N. Y.
- SCHOOL GARDEN ASSOCIATION OF NEW YORK.—121 E. 51st St., New York, N. Y.
- SOCIETY OF ARTS AND CRAFTS.—7 W. 56th St., New York, N. Y.
- SOCIETY OF BEAUX ARTS ARCHITECTS.—126 E. 75th St., New York, N. Y.
- SOCIETY OF ILLUSTRATORS.—Art Center Building, New York, N. Y.
- SOCIETY OF INDEPENDENT ARTISTS, INC.—1947 Broadway, New York, N. Y.

DRAMA

- ACTORS' EQUITY ASSOCIATION.—45 W. 47th St., New York, N. Y.
- ACTORS' FIDELITY LEAGUE.—17 E. 45th St., New York, N. Y.
- ACTORS' INTERNATIONAL ASSOCIATION.—701 Seventh Ave., New York, N. Y.
- AMERICAN DRAMATISTS.—2 E. 23rd St., New York, N. Y.
- AMERICAN DRAMATISTS' AND COMPOSERS' SOCIETY.—2 E. 23rd St., New York, N. Y.
- DRAMA LEAGUE OF AMERICA.—59 E. Van Buren St., Chicago, Ill.
- ENGLISH FOLK DANCE SOCIETY.—159 E. 33rd St., New York, N. Y.
- EPISCOPAL ACTORS' GUILD.—1 E. 29th St., New York, N. Y.
- INTERNATIONAL THEATRICAL ASSOCIATION.—1540 Broadway, New York, N. Y.
- MOTION PICTURE DIRECTORS' ASSOCIATION.—234 W. 55th St., New York, N. Y.
- MOTION PICTURE PRODUCERS AND DISTRIBUTORS OF AMERICA, INC.—469 Fifth Ave., New York, N. Y.
- MOTION PICTURE THEATRE OWNERS OF AMERICA.—25 W. 43rd St., New York, N. Y.
- NATIONAL ASSOCIATION OF THE MOTION PICTURE INDUSTRY.—Times Bldg., New York, N. Y.
- NATIONAL BOARD OF REVIEW OF MOTION PICTURES.—70 Fifth Ave., New York, N. Y.

COGNATE SOCIETIES

PHOTOPLAY LEAGUE OF AMERICA.—
221 W. 57th St., New York, N. Y.
THEATRE GUILD, INC.—243 W. 52nd
St., New York, N. Y.

MUSIC

AMERICAN GUILD OF ORGANISTS.—29
Vesey St., New York, N. Y.
CANTORS' ASSOCIATION OF AMERICA.—
40 Second Ave., New York, N. Y.
CHORUS EQUITY ASSOCIATION OF
AMERICA.—110 W. 47th St., New
York, N. Y.
GRAND OPERA SOCIETY OF NEW YORK.
—939 Eighth Ave., New York, N. Y.
JEWISH FEDERATION FOR MUSIC AND
DRAMA, INC.—5 Beekman St., New
York, N. Y.
LEAGUE OF COMPOSERS, INC.—29 W.
47th St., New York, N. Y.
MACDOWELL ENDOWMENT FUND ASSO-
CIATION.—1 E. 57th St., New York,
N. Y.
MUSICAL ALLIANCE OF THE UNITED
STATES, INC.—501 Fifth Ave., New
York, N. Y.

NATIONAL BUREAU FOR THE ADVANCE-
MENT OF MUSIC.—45 W. 45th St.,
New York, N. Y.
NATIONAL MUSIC LEAGUE.—105 W.
57th St., New York, N. Y.
NATIONAL PATRIOTIC SONG COMMIT-
TEE.—62 Washington Square South,
New York, N. Y.
NEW YORK COMMUNITY CHORUS.—5
Columbus Circle, New York, N. Y.
ORATORIO SOCIETY OF NEW YORK.—
111 W. 57th St., New York, N. Y.
OPERA AND DRAMA SOCIETY.—203 W.
54th St., New York, N. Y.
PEOPLE'S CHORUS OF NEW YORK.—
41 E. 42nd St., New York, N. Y.
PHILHARMONIC SOCIETY OF NEW
YORK.—113 W. 57th St., New York,
N. Y.
RUSSIAN BALALAIKA ORCHESTRA AS-
SOCIATION.—1493 Broadway, New
York, N. Y.
SUNDAY SYMPHONIC SOCIETY.—1620
Broadway, New York, N. Y.
SYMPHONY SOCIETY OF NEW YORK.—
33 W. 42nd St., New York, N. Y.

DIVISION XXVII

EDUCATION

EDUCATIONAL METHODS

By ROBINSON G. JONES

SUPERINTENDENT OF PUBLIC SCHOOLS, CLEVELAND

DEVELOPMENT OF SCHOOL SYSTEMS

Philosophical Factors.—It will be recalled that, in the play popular some twenty years ago, *The Passing of the Third Floor Back*, the stranger who came to the lodging house was not interested so much in the sort of room he obtained as in the philosophy of life of the landlady and of his fellow lodgers. In school systems as in the lives of individuals, acts grow out of philosophy. In America we are supposed to have the philosophy of democracy. Sketching through American history, we can see definite democratic trends and surges, some short-lived, some enduring.

Oddly enough, in this democratic country we have had until the beginning of the present century educational systems that were on the whole autocratic rather than democratic. Free public education was a development of our later history, and this development, until recently, was marked by autocratic philosophy which resulted in teaching methods that followed the school of strict discipline and formalism. Education at first, of course, was in the hands of the Church, and pupils were taught what the Church wished them to be taught. The various Protestant sects which sponsored education in America had precisely the same point of view.

Trend to Democracy.—Later education became more a business of the State and the Prussian school system of Germany became a model of autocratic efficiency for the whole world. America followed this model. Until

relatively few years ago, we had in the United States a school system autocratic in philosophy and method. The policy of the educator, whether of Church or of State, was to indoctrinate pupils. The point of view was that of the authoritarian. During the past ten or fifteen years, both philosophy and methods have undergone drastic changes in the direction of democracy. Professors Dewey and Kilpatrick of Columbia University, and Professor Bode of Ohio State, to mention but a few, have supplied the philosophy and in a measure suggested the method. In brief, the most influential present philosophy of education is opposed to indoctrinating children with a set of carefully selected facts. On the contrary, children are exposed to truths and to situations in which they themselves live, and opportunity to develop as their own individualities and capacities permit is made possible. Scientific methods have accompanied the growth of democracy in education. Educational processes are being reconstructed by the laboratory method, by the utilization of test and experiment.

CHARACTER EDUCATION

Tests and Conclusions.—Consider, for instance, character education. In this field, during the past year or so, tests have been devised and applied to reveal what character is and how it changes under varying school environments. These indicate three things: first, that character development is not the result of any par-

ticular moral code; second, that character is probably a function of the strength of the individual and a revelation of the social pressure under which he works; third, that deformities in character are the result of inequality between pressure and strength. This brings us to the conclusion that remedial measures are mainly concerned with the adjustment of the individual's environment to restore a proper balance between social pressure and his own strength.

Moralist Dicta.—Influenced by the autocratic philosophy, moralists of the conservative school follow the dictum, "Spare the Rod and Spoil the Child." They set forth a code of morals. They say that this is right, and this is wrong; that you must do this or you mustn't do that. They say that in the field of character. In the field of vocational training, they say that John is going to be a doctor; Susan is to be a nurse or a teacher; William must be an architect. For Joe and Jim and Harry there is no future at all. Let them be day laborers if they can find work. Give them a moral code, make them fairly literate, and turn them loose for rough work in field or factory.

Opposed Theory.—The democrat in philosophy and methods is saying today—and what he says applies to preparation for vocation as well as making of character: "Let the boy try and fail or let him try and succeed. Help him if he fails. Give him guidance and advice. Close no doors to him, even though you think he will never make an architect or a lawyer or a professor. Perhaps after he fails in Latin he will see that after all it is better for him to be an automobile mechanic than a pharmacist." The autocrat in education says this is wasteful; allocate these children while young; give them no more schooling than is necessary at public expense; get them into their places in life as directly as possible.

INTELLIGENCE TESTS

Efficacy Attacked.—This past year has been marked by renewed attacks upon the use of mental and educational tests to predict probable suc-

cess of children in various lines of work and to aid in their classification for purposes of instruction. There is no doubt that some educators have become too enthusiastic about intelligence tests, and through their claims have made these tests appear somewhat ridiculous. Nevertheless, intelligence tests as used in an increasing number of public schools are of such genuine help that to discard them would be to take a big step backward.

STUDY COURSES

New Adaptations.—In this past year, some new courses of study have gone so far as to recognize the wide range of intelligence as pointed out by Professor Thorndike in his latest book on the measurements of intelligence. Experimenters in these courses find that interest of bright pupils is sustained by problems difficult enough so that fundamental skills are easily acquired. Similar skills of a lower level can be obtained by slower pupils only where the materials are easy enough to insure success. The interest of bright children is now held by a wide range of application. With slower pupils this range is narrowed to one or two successful applications of the process. Among bright children, speed in covering of ground often adds to the interest. In working with a slower group, deliberation in covering the ground is likely to maintain interest whereas speed with such a group might destroy it.

Scientific Methods.—The best of the newer courses of study, in accordance with the educational method that flows from the democratic and the scientific points of view, take into consideration not only the powers of pupils but the interests of pupils and the needs of society for certain types of character, knowledges, and skills among its citizens. We find ourselves deriving methods from a scientific study of classroom work. On the basis of stenographic reports, devices and materials, by which we have held the interest of pupils, are sometimes startlingly revealed. In a measure, every classroom, if the teacher is well grounded, becomes a psychological laboratory for the application and oc-

asionally for the discovery of important methods in teaching and learning.

Examples.—Many examples could be given here to illustrate this point. Let one suffice. A careful study was made of different methods utilized in teaching art to school children who attended a part-time class in a large city art museum. Nine or ten different methods were used. The only ones which showed any superiority over others were those which employed methods based on the commonly recognized laws of learning: readiness, use, and effect, and upon the physiological fact of perseverance. It was discovered that with bright children the interval between purpose and actual performance seemed to increase the speed of learning. That is to say, bright minds, once ready to work, find it difficult to let go of an idea until it has been developed. On the other hand, slower children learn better when brought into contact with the material in which

their interests are, provided this contact comes very quickly after interest is aroused, and the purpose to do something about it is established. As a result of this study, the teaching staffs of two or three large city museums are considering the entire reorganization of their teaching methods.

SUMMARY OF PROGRESS

The best summary of the year's progress in the field of educational philosophy and method is to be found in Bertrand Russell's recent work, *Education and the Good Life*: "There is only one road to progress, in education as in other human affairs, and that is: Science, wielded by love. Without science, love is powerless; without love, science is destructive. All that has been done to improve the education of little children has been done by those who loved them; all has been done by those who knew all that science could teach on the subject."

PRIMARY AND GRADE SCHOOLS

By ARTHUR S. GIST

PRINCIPAL, BURBANK AND WHITTIER SCHOOLS, OAKLAND, CALIFORNIA

Pupil Capacities.—For several years the schools have been carefully charting the individual capacities of the pupils. Following this initial plan are several distinct steps of further progress. The pupils entering the first grade in many cities are now given carefully devised entrance tests for the purpose of early classification upon the basis of ability and maturity. Some of these tests, like the Detroit Entrance Test and the Burr Classification Test (Seattle Public Schools), have been so carefully arranged that as high as 85% of the pupils classified on the basis of such tests show relatively the same ability later in the year as evidenced by the teachers' judgment of their achievement.

In some cities pupils are carefully classified according to their mental capacities, scholastic achievement and the teachers' estimate of their accom-

plishment. The next step has been the modification of the content of the curriculum and the method of teaching to suit individual differences of the pupils. Drill work, minimum requirements and industrial work of an educative nature, constitute the course for those of limited capacity. For the accelerated pupils, the courses are being enriched so that the pupils' initiative, resourcefulness and creative tendencies may be developed to the fullest capacity. The tendency in progressive school systems is to enrich the work for the accelerated, that they may not mark time nor be crowded rapidly through the elementary course with serious social problems resulting.

Health Activities.—The schools are now looking after the health of the pupils carefully and scientifically. Most pupils are thoroughly examined by the health department and the par-

ent advised as to means of improvement. State laws require definite schedules of time for physical education and organized play. School buildings are designed to provide for the health and comfort of the pupils; and gymnasiums, and play courts are also included in many modern school plants. Lunchroom facilities, providing hot lunches at small cost, are to be found in thousands of elementary schools, many states enacting legislation legalizing such undertakings. Milk, crackers and orange juice are also sold to the pupils during the morning recess period when many pupils need nourishment. Health centers, hospital clinics and disease-control plans are included in the health programs in many places.

Art Instruction.—The teaching of art is taking on two distinct aspects, the appreciation of the beautiful and the use of art as a means of expression. Carefully planned trips to art galleries and museums are in vogue in many places, thousands of pupils receiving such benefits under expert guidance. Pupils also express themselves freely and quite vividly by means of drawings and pictures of all kinds. They sketch scenes described in their reading as a check upon intelligent interpretation and as an interesting form of showing their pleasurable reading. Posters of all kinds are made to convey ideas, such as health, safety, thrift, home industry campaigns, etc. Applied Art is freely used to decorate booklets made in all grades. Large community posters and scenes are made vividly to show certain historical incidents. Applied Art as a means of expression is coming into common usage in the schools.

Pre-School Education. — Progressive plans provide for the organization of the mothers of the pre-school child, for nurseries and for infant clinics. These help to train the mothers in looking after the health of the child and to develop him properly otherwise. Training in parenthood is quite generally recognized as a necessity, the public schools in many

places assisting and often assuming full responsibility. Paralleling this movement is that of adult education which attempts to continue the education of the adults that previous training and education may become vitalized for the benefit of the individual and society. Social and educational trends seem to point in the direction of very inclusive educational programs. We are living in a complete form of society which requires constantly changing programs to meet new problems and consequently need demands.

Socialization of the Schools.—Well defined theories are now functioning efficiently in socializing many fields of education. Miniature democracies of various forms are now in vogue in many schools. These socializing opportunities provide situations for the pupils much as they exist in actual life outside of the schools. Ideals of right conduct, self-reliance and self-determination of the right kind train the pupils in the proper administration of many school activities under the skillful leadership of the teaching staff.

Music.—Music instruction at the present time is arousing a keen interest in the better class of music. Memory exercises train the pupils in distinguishing the best selections as well as developing their appreciation of good music. Orchestra work and choruses of many kinds are producing splendid work, the pupils volunteering to participate even though it means hours of practice work outside of the regular school hours each week. Public musicales given by the pupils are very common. The parents and the general public hearing these concerts are proud of the schools' success with the pupils in music. Much of this instruction carries over into the outside life of the pupils. They have many opportunities to use this music ability for pleasure as well as for profit. Much of the good music heard over the radio and in the theaters can be traced to the music appreciation work in the schools.

SECONDARY SCHOOLS

By PHILIP W. L. Cox

SCHOOL OF EDUCATION, NEW YORK UNIVERSITY

Features of 1927.—In a survey of secondary education in the United States in 1927, seven features stand out in rather chaotic and, at first glance, unrelated fashion. These features include:

- (1) The continued rapid growth in public high school and private parochial school enrolments;
- (2) The increase of diversification of curriculum offerings in both public and private high schools;
- (3) The emphasis given to the behaviors and attitudes of individual pupils;
- (4) The growing conception of the school as a socialized environment;
- (5) The almost bitter attacks on the public high schools by the Carnegie Foundation and by various college professors because
 - (a) they are not standardized,
 - (b) they are not ruled by the European tradition of subject-matter sequences,
 - (c) their pupils and graduates are "credit seekers," and
 - (d) their graduates go to college because it is the fashion and not because of a love for learning or of a desire to do any serious educational work;
- (6) The challenge of the Committee on Junior Education and Employment of the American Association of Manufacturers which has attacked compulsory education above the sixth grade in the belief that it is of little value for the intellectually less able children, and that industry itself holds greater promise than the schools for the education of these children; and
- (7) The earnest, but not altogether successful, efforts of college professors of education, superintendents of schools, and high school principals to understand what it is all about, to make orderly and philosophical statements of principles to govern the future developments of the school, and to devise other than makeshift adaptations of curriculum and administration to meet the emergencies.

Enrollment.—Viewed from the standpoint of sociology, however, these contradictory or unrelated aspects become understandable in their relations, one to another. Economic prosperity in urban centers, together with the more rigid enforcement of compulsory school-attendance laws, is resulting in a phenomenal growth of urban high school enrollments. In September, 1927, New York City's four-year high schools had an enroll-

ment of 141,452 as against 72,789 in 1920; continuation schools for working pupils which had only 6,932 pupils in 1920, enrolled 59,889 in 1927; vocational high school enrollments have increased from 2,881 in 1920 to 4,399 in 1927; and junior high schools, which are replacing the last two grades of the elementary school and the first grade of the four-year high school reported 85,466 pupils, as compared with 33,903 in 1920. While data for the country at large is not yet available for the current year, it is obvious that similar increases are taking place throughout urban America. These cities have become the centers of dynamic political, commercial, and industrial influences which interact to give various social expressions. Newspapers, books, magazines, theaters, museums, parks, libraries, university extensions, motor cars, week-ends away from the city, luxurious clothes—these typify the extra-vocational interests of the complex, specialized, economically comfortable people who live in modern cities. Such institutions and activities represent the search for culture and for social advantages heretofore denied to the masses. High school attendance and the study of academic subject-matter is largely a reflection of the struggle to obtain through the schools the equipment of the élite.

Conflicting Demands.—The schools are, on the one side, under constant pressure from parents and social-political groups to furnish to the taxpayers' children what they demand, and, on the other side, under pressure from the colleges to demand a higher level of scholarship year by year. The school is required by colleges and by State Departments to certify graduates in terms of credits—but the colleges (and the rest of the world) do not want the "credit-seeking" students which they demand of the high schools; they want young men and young women of purpose,

personality, and future promise. Hence, the high school has the somewhat difficult task of discovering such young men and women, of leading them to *earn credits* in the poorly planned and relatively meaningless college entrance subjects without encouraging them to become "credit seekers."

The social prominence of the college entrance group is so great that all academic curriculum-modification is thwarted, even though no intelligent person would attempt to justify or defend the present liberal arts preparatory curriculum—either as a whole or in any detail. Fortunately, the adolescents themselves come to the rescue of their parents and of the school and college administrators. They demand their chance to live as members of their age-groups. Their orchestras, dances, athletics, debating, dramatics, journals, assemblies, and many other social undertakings do make of many of them young men and young women of *purpose, personality, and promise*. In too many cases, however, this urge leads to much purposeless waste of time and energy and to regrettable excesses.

The secondary school of 1927 is then an experimental effort to provide a creatively controlled environment in which boys and girls may educate themselves under the leadership of inspiring and sympathetic and intelligent teachers. These mature friends are coming to know or, at least, to sense the complexity of the problem of the child's adjustment to adult *mores*, both beneficent and vicious as these "standards" sometimes are.

Student Grouping.—In this endeavor, schools are grouping their pupils homogeneously according to ability and interest, not only in class sections, but also in departments or sub-schools. Thus one large high school contains a North, a South, an East, and a West school, each one planned to meet the needs of a particular type of pupil. Another has a

King's Oaks, a Midvale, and a Van-deveer school. The curriculum and the type of teacher-guidance is planned so that every pupil will be challenged to put forth the best that is in him with the assurance that if he makes reasonable effort he can and will succeed.

The high school is abandoning the selective principle of retention and rejection and is substituting therefor a policy of differentiation and retention. The aim of progressive secondary schools in 1927 is success for every pupil and, by means of these successes in purposeful activities, the integration of every child's personality.

Student Adjustment.—Because of shortcomings of school and home in dealing with children—and, to a less extent, because of biological inheritance—emotional maladjustments are common among adolescent children. High schools are increasingly conscious of the importance of this problem, and are finding supplementary agencies important in helping children to adjust themselves to their environments. Hence, in large schools there are found a psychiatric clinic, vocational counsellors, class guides or deans, and sometimes visiting teachers. Pupils who do not "find themselves" in the friendly environment of "home-rooms," socialized recitations, adapted curricula, assemblies, clubs, physical recreation, and the rest, are studied by the special officers; their home environments are investigated and, perhaps, altered if parents can be persuaded to cooperate; the resources of extra-school agencies are sometimes called upon and their efforts are helpfully coordinated. The modern high school comes into the life of the community in more or less conscious effort to fulfill the mission of democracy—that every boy and girl of today and, hence, every adult of tomorrow may live a more abundant and satisfying life!

COLLEGES AND UNIVERSITIES

By THEODORE A. DISTLER

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NEW YORK UNIVERSITY

GENERAL SITUATION

Enrollment Problem.—The year 1927 showed a marked increase of self-analysis and experimentation in colleges and universities. The greatest problem confronting the colleges and universities has been the adjustments brought on by increased enrollment. In 1915-16 there were 250,000 students in colleges. In 1923-24 there were 720,000, and it is estimated that at present there are over one million. Since 1901 the population of the United States has increased 20%, while the college population has increased over 700%. The hope for solution lies in the following: a selective process, a new philosophy of curriculum construction, and a newer student personnel service.

Admission Procedure.—Many colleges have reorganized their admissions procedures to include one or several of the following: the certification of the school, direct examinations in subject matter, psychological tests, recommendations from the official or secondary schools, personnel records, and personal interviews. Each college is now engaged in a thorough study of the efficiency of the particular procedure suitable for its own conditions. The outstanding tendency in 1927 is the stress upon the secondary-school recommendations and personal interviews with candidates for admission.

INTEREST IN COLLEGE LIFE

Magazines and Newspapers.—The increased interest in our colleges and universities is apparent in the fact that no less than 160 articles on higher education have appeared within the last year in magazines other than those devoted to educational purposes. Magazines of varying grades have published articles written not only by men who hold high positions in colleges but also by laymen. These discussions are ex-

clusive of the many articles in newspapers.

Student Participation.—In addition to this outside interest, the students are by invitation taking a greater interest in all phases of college life than ever before. They are making detailed surveys with concrete and valuable suggestions as to how the college may be improved. These surveys are complete and examine all matters, including the curriculum, teaching and teachers, athletics, student activities, finance, etc. Since the first Dartmouth survey in 1923-24 undergraduates have been estimating the value of the college education. Wesleyan University students recently published a searching document in which the student council reports a study covering all phases of the institution and making specific recommendations. More and more are undergraduates being invited to consult with faculty members on matters which were formerly considered purely under faculty jurisdiction.

National Student Federation.—Just as the members of a faculty have associations in various fields of science, modern languages, etc., so the undergraduates have formed a National Student Federation, which has been in operation since 1925. This organization undertakes to emulate associations of college representatives in discussing among themselves the problems which affect them as undergraduates, and to formulate policies which will be backed by this organization as representing the undergraduate thought of America. At its recent conference in Nebraska the National Student Federation voted to establish a permanent office in New York, in order to distribute all information pertinent to undergraduate bodies.

CURRICULA

Adjustment.—The curriculum is undergoing a sharp adjustment. A

number of colleges are reorganizing their entire curricula, and many new colleges are formulating a type of curriculum distinctly different from the heretofore accepted outline of studies. The profession of educational diagnostician is developing. Colleges in increasing numbers are employing men to study, compare, and reorganize the entire college organization. These men may be outsiders or may be drawn from the faculty of the particular institution. At Stanford University it is the Registrar, at Purdue it is the Director of Educational Reference, at Minnesota the Deans of Education. Although the orientation course is not accepted by all colleges as being of real value, it was the forerunner in the experimental study of the college curriculum.

Tendencies.—Many colleges are getting away from the old concept of the curriculum viewed as a compendium of knowledge and are tending toward the practical method in an attempt to functionalize the curriculum, the eventual idea being a curriculum for every student. Some colleges are attempting to relate the curriculum to life. There is a tendency to group subjects. It is only necessary to view the colleges which are starting out on new ventures to realize the tremendous amount of experimentation being carried on, not only by particular branches but throughout whole colleges.

Whittier College is making a decided change which points to a definite functionalization of the curriculum. Wisconsin, in its experimental college, under the direction of Professor Meiklejohn, is attempting to individualize the course of study. Swarthmore, with its honors course, is providing for the better grade of student. Princeton and Harvard, by means of the preceptorial and tutorial method, are hoping to develop the individual. The projected institution at Bennington, Vermont, expects to train women for a broader life at home. The Cranbrook development at Michigan is striving to introduce a new type of art education. The Claremont College plan forms the newest type of cooperative en-

deavor. One could mention institution after institution where unique developments are taking place. Many of them are experimental but all are of great importance to the newer educational outlook. Doctor Kelly of the Association of American Colleges very ably sums up the modern tendencies in curriculum construction when he states that they may be covered by the following divisions: simplification, socialization, individualization, liberalization.

COLLEGE TEACHING

Training Problem.—There is developing among the colleges the distinct feeling that more and more attention ought to be paid to good teaching. Many modern educators think the present system for Ph.D. work in our graduate schools is not producing good teachers. A study of the problem is now under way by a Joint Commission on Enlistment and Training of Teachers with members from the Association of American Universities and the Associations of American Colleges. A new commission along similar lines is also being formed in the American Council of Education. The Association of American University Professors reports that some means must be found to help the young instructor in his function as a teacher. The various surveys which have been made and the questionnaires which have been answered by educators, college presidents, and deans throughout the country show that the greatest weakness in the college program is lack of competent teachers.

PERSONNEL MOVEMENT

Purpose. — Mass methods were forced on the colleges by the tremendous influx of students. The personnel movement is the effort to minimize these evils and to help the individual find himself as an entity again. The philosophy underlying its introduction is not to duplicate existing services but to furnish a coordinating agency for all services seeking to help the student in his effort to adjust himself to college and college life. There has been a decided increase in thinking of the stu-

dent as an individual, and the colleges are placing greater stress on the personnel work within their organizations.

The types of personnel work are individualized in particular colleges. Columbia, Illinois, Cornell, and Oklahoma are forming relationships with various religious boards of education and receiving from them assistance in their personnel problems. An interesting relationship is indicated by the cooperation of the National Junior Personnel Service Incorporated and New York University in the development of student personnel service. The Y. M. C. A., the churches, the psychologists, the psychiatrists, the chaplains, the physicians, are all contributing to the new personnel movement among the colleges.

COST OF EDUCATION

Cost of education in college is advancing rapidly. In the state institutions it does not burden the student, as it does in the privately-endowed institutions. The burden is being met largely by scholarships, which take care of the poor but deserv- ing student in the larger colleges. The movement to insist upon the cost of tuition paying the full charges for

the cost of education was started by the professional schools, the large majority of which at the present time charge a fee large enough to cover the entire cost of operation. This tendency has its prototype in the newer methods of securing money for the colleges.

Philanthropists have been solicited freely, and the recent movement started by the Council of Church Boards of Education is to enlist the great American business enterprises for aid in asking people in all walks of life to give intelligently and within their means. As a result the following types have been suggested, with greater stress laid on the last four of these suggestions: direct and absolute gifts (becoming relatively less frequent), annuity agreements, living trusts, bequests by insurance, bequests by will. The most likely agents for further endowment of universities and colleges are insurance companies, trust companies, banks, and lawyers. It is to these intermediaries that the universities must look for aid. It is to them that the universities must express their needs, so that they, in turn, may express these needs to their clients, who can then give intelligent assistance.

PROFESSIONAL SCHOOLS

By WALTER J. GREENLEAF

U. S. BUREAU OF EDUCATION, WASHINGTON

STANDARDS

To some extent the present status of the professions of medicine, dentistry and law is indicated by the fact that there are 142 physicians and surgeons, 53 dentists, and 116 lawyers for each 100,000 population of the United States (1920 census). The advancement of these professions has been accomplished through several agencies. The study on Medical Education made by the Carnegie Foundation for the Advancement of Teaching (1910) is outstanding. Within the past few years definite educational standards have been drawn up and school ratings made by the Council on Medical Education (American

Medical Association) for the medical profession, by the Council on Dental Education (American Dental Association) for the dental profession, and by the Council of Legal Education (American Bar Association) for the legal profession. Through these organizations the professional schools are now rated as class "A," class "B," or class "C" schools. A class "A" school is one which meets and maintains the standards outlined; a class "B" school does not meet the requirements, but shows promise of doing so within a reasonable length of time; a class "C" or "unclassified" school does not or cannot meet the requirements for various reasons.

PROFESSIONAL SCHOOLS

MEDICAL EDUCATION

The delicate surgical operations which are performed today were not possible twenty-five years ago. In medical treatment, the highly technical methods now employed, and the increasing use of various vaccines, serums, Röntgen-ray, radium, and other new products, require skill and good judgment in application. With the new demands on the medical profession, only high-class medical schools are competent to train students to care for the sick and injured in an efficient manner.

All States except California, Delaware, District of Columbia, Massachusetts, Missouri, Nebraska, Nevada, Ohio, Pennsylvania, and Wyoming, require two years of pre-medical college work for admission to the medical schools. Thirteen States—Pennsylvania, New Jersey, Alaska, Rhode Island, North Dakota, Washington, Illinois, Michigan, Iowa, Delaware, South Dakota, Utah (1926), and Wisconsin (1927)—require hospital internship before the license to practice medicine is granted.

The average fee charged per student covers only one half of the actual expense of his medical education; the remainder is paid through State aid or private endowment. In 1927 the average fees charged per student in all medical colleges was \$245 compared with \$145 twelve years ago; one institution recently raised the tuition to \$600 per year.

Eighty medical schools are listed in 1927. Seventy-one are rated class "A"; three are class "B" schools; and the remaining six—class "C"—require complete reorganization to make them acceptable institutions. Seventy-four are nonsectarian schools, two are homeopathic, three are eclectic, and one is nondescript. Eight are limited to men students, one to women students, and the remainder are co-educational. Twelve require a year of hospital internship before awarding the M.D. degree.

For the year 1926-27 the medical schools enrolled 19,662 students (964 women)—an increase of 822 over the previous year, and the largest student enrollment since 1911. In June, 1927, 4,035 students (189 women)

were graduated and of these 2,486 also obtained bachelor degrees.

DENTAL EDUCATION

Compared with the medical profession dentistry has lagged behind, but the present year shows evidence of rapid development in the near future. The present-day dental student is required to complete four years of high school, one year of college, and four professional years of at least 32 weeks each for the dental degree. In 1916 the Dental Educational Council of America adopted minimum requirements for Class "A" dental schools and revised the requirements in five different years, strengthening the standards of dental schools with each revision. The last revision (December, 1926) includes articles on policy, minimum entrance requirements, advanced standing, staff, equipment and teaching facilities, course of study, State board record, and definitions of school ratings.

The study "Dental Education in the United States and Canada" completed in 1926 by the Carnegie Foundation for the Advancement of Teaching attempts to "do for dental education as it now exists, the same service that the Foundation undertook to perform (1910) for medical education—to survey the field, to state the essential facts as they exist today, and to seek to draw such conclusions as may be helpful to those who are concerned with medical and dental education." This study concludes that dentistry, as an important branch of health service, cannot longer be ignored in the training of general practitioners of medicine, and should remain a health service of equal recognition with other specialties of medicine. The actual practice of dentistry must be in the mouth itself and requires a union of medical knowledge, tactual skill, and mechanical precision not called for in other specialties of medicine. Also proposed are two pre-medical college years, and three years for the undergraduate curriculum instead of four; and the establishment of combined dental and medical courses.

On August 1, 1927, forty-one dental schools were listed and twenty-six

were rated class "A," twelve class "B," and three "unclassified." In 1926-27 about 12,000 dental students were registered in these schools, and about 2,600 were graduated. Approximately 87,000 students have been graduated from the American dental schools since 1841.

LEGAL EDUCATION

While the science of medicine and of dentistry are in a sense international in scope, that of law is restricted more or less to American legal procedure. Equipment of law schools is less expensive than facilities for medical sciences. A course in law may be completed entirely in evening schools. These facts perhaps account for the less rapid advancement of educational requirements in law than in medicine. In 1910 the legal profession lacked standards; study at a law school was not required for admission to the bar; and by "reading law" in a legal office a student was enabled to become a lawyer. In 1925, however, educational standards were drawn up by the Council on Legal Education and sixty law schools were listed in class "A" and three in class "B."

The Association of American Law Schools in 1927 has grown to an organization of sixty-one schools (including the University of the Philippines, but excluding McGill in Canada). Any school which is a member of this association "shall require

of all candidates for its degree at the time of their admission to the school, either the completion of two years of college work or such work as would be accepted for admission to the third or junior year in the college of liberal arts of the State university or of the principal colleges and universities in the State where the law school is located." Commencing September 1, 1927, "it shall own a law library of not less than 7,500 volumes, which shall be so housed and administered as to be readily available for use by students and faculty. For additions to the library in the way of continuations and otherwise, there shall be spent over any period of five years at least \$7,500 of which at least \$1,000 shall be expended each year." Its faculty "shall consist of at least three instructors who devote substantially all their time to the work of the school; and in no case shall the number of such full-time instructors be fewer than one for each 100 students."

In 1927, 167 law schools are listed. Seventy-six are full-time, seventy-four are part-time, and seventeen are mixed schools. A total registration of 41,580 students (excluding pre-legal enrollment) is reported by 142 of these institutions—an increase of 2,712 over the previous year. Compared with the medical profession, there are twice as many law schools, listed, and twice as many students.

PURE RESEARCH IN EDUCATIONAL INSTITUTIONS

BY ELBERT VAUGHAN WILLS

EDITOR-IN-CHIEF, U. S. NAVY DEPARTMENT STANDARD STOCK CATALOGUE

THE NATURE OF THE RESEARCH ACTIVITIES

Distinctions.—In dealing with pure research in educational institutions, it is necessary to distinguish between the activities of members of the instructional staffs of such institutions or advanced research fellows, and research by students. The first of these categories comprehends activities of vital importance, not only because the outstanding research

achievements of universities are made through such effort, but also because of the stimulus which the example of such research affords to the second group.

Research of Instructional Staffs has been conducted in recent years in the face of many disadvantages arising from increased undergraduate student attendance. Attention has been forcibly directed to the problem thus presented by the cam-

paign of the National Research Endowment for raising a fund of \$20,000,000 to be expended over a period of ten years in promoting pure science research in American universities. A number of the leading universities have been able to facilitate research by members of their staffs through funds available for making grants in assistance of specific projects. Cornell University, for example, announced in June awards aggregating \$50,000 to thirty-two members of its faculty from the Heckscher fund. These awards are designed to assist research in progress, and may be devoted to employing assistants, assembling source material, or other needed service. Similarly, at Harvard University the Milton fund yields an annual income of about \$50,000, from which in 1927 grants were made in assistance of twenty-four research projects undertaken by members of the Harvard faculty.

Research Fellowships.—Important service in pure research is also rendered by holders of research fellowships. Appointees have ordinarily received the doctorate and have demonstrated their ability in basic investigation. Thirty-four fellowships of this character were awarded by Yale University during 1927. Such fellowships are to be distinguished from fellowships and scholarships awarded to graduate students engaged in study and research for the doctorate. The latter are available in varying number at virtually all universities and are also an important factor in promoting pure research.

Numerous research fellowships and grants in aid of research projects are also awarded by the various boards and foundations, as the National Research Council and the Social Science Research Council. The Commonwealth Fund announced in May the award to graduates of British universities of twenty-three fellowships which provide for two years of study in an American university.

PLACE OF EDUCATIONAL INSTITUTIONS IN RESEARCH

Research Technique.—The year marked definite progress in the understanding of the interrelations and

functions of the several aspects of research and the recognition of the dependence of all research, pure and applied, upon the agencies of higher education for providing training in research technique. The way had been prepared by the searching consideration given to questions connected with research in educational institutions at the meetings of the various learned societies held during the closing days of 1926. The American Historical Association discussed "The College and Research." The same association, in connection with its campaign for an endowment of \$1,000,000 for promoting historical research, appointed a committee to draw up a "Proposed Programme for Research and Publication." This committee conducted a survey of the productivity of Doctors of Philosophy in history. Deficiencies were found both in the provision on the part of educational institutions for opportunities for research and the performance of individuals therein.

Promoting Research.—At the meeting of the American Association for the Advancement of Science, there was presented a noteworthy symposium on "Research in Colleges and Professional Schools." The association adopted a motion to extend an invitation to the National Research Council, the American Council on Education, the Social Science Research Council, and the American Council of Learned Societies each to name a representative to meet a representative of the American Association for the Advancement of Science, the five representatives to consider and enter upon the outlining of definite plans for encouraging and promoting the undertaking of research in American colleges.

OUTSTANDING EVENTS OF 1927

Numbers and Research.—The adequate accommodation of the number of students seeking higher training has constituted one of the most important of the post-war problems of American universities, both on the college and the graduate level. This problem was brought to attention during the year from several divergent viewpoints.

Harvard.—The annual report of the dean of the Harvard Graduate School of Arts and Sciences pointed out the growing "demand for teachers and research workers in many fields, due to the remarkable growth of colleges and universities and the expansion of business" and concluded that "it would be a pity to diminish the supply at the source." He recommended, accordingly, the provision of facilities for accommodating a larger enrollment, rather than restriction of numbers.

Columbia.—The annual report of the dean of the faculties of political science, philosophy, and pure science at Columbia University recommended that admission to graduate study in that institution be restricted to students possessing special equipment and capacity for research and scholarship. He pointed out that from two-thirds to three-fourths of the graduate students at Columbia seek personal improvement or vocational advancement unrelated to research or original scholarship.

College Courses.—The problem of "The Relation of the Senior College and the Graduate School" was considered at the annual conference of the Association of American Universities in November, 1926. Statistics compiled at the University of Chicago and at Harvard indicate that about 40 per cent of the course registrations by graduate students at those universities are for courses open also to undergraduates. Such courses are primarily informational in their purpose and scope, and while forming a background for the development of research technique, involve in themselves no direct training in research. The conclusion was that the senior college should be separated from the junior college and should be related more directly to the graduate school. Such an arrangement has been undertaken by the Johns Hopkins University, where the first two years of the college course are being discontinued, and where a selected group will be trained in research, beginning with the senior college level and leading to the doctorate after a minimum of four years of specialization.

These discussions point to the

probable necessity of the recognition in the no distant future of two distinct levels in graduate training, namely, a junior graduate school, which shall provide instructional courses serving to supplement the work of the college or to prepare for the more advanced level of the senior graduate school, and leading to the master's degree; and the senior graduate school devoted solely to research, experimentation, and publication.

Research Professorship at Smith College.—On April 27th was announced the establishment of a research professorship of psychology, through the gifts of friends and admirers of Dr. William Allan Nielson in honor of his completion of a decade of service as president of Smith College. To this chair was appointed for five years Professor Kurt Koffka, of the University of Giessen, a distinguished representative of the *Gestalt* school of psychology. The terms of the endowment release the incumbent of this professorship from teaching duties and provide entire freedom in research.

Princeton.—Princeton University announced May 30th two gifts, each of \$200,000, for the endowment of a chair of physics and a chair of chemistry. A previous gift of \$200,000 had provided for the endowment of a research professorship of mathematics. It was stipulated that the incumbents of the new chairs of physics and chemistry should be "creative scientists of high distinction" and that they should devote their attention to research in these fields. These gifts constitute a part of the \$2,000,000 endowment for pure science research the raising of which was undertaken by Princeton University in 1926 as a condition of receiving a gift of \$1,000,000 from the General Education Board.

Research Fellowships in Southern History.—In May, Princeton University announced an anonymous gift which will enable that institution during the next three years to train and support in the field two graduate students in Southern history. The conditions of the gift stipulate that the students shall be selected from Southern colleges, shall study at the

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Princeton Graduate College for two years, and shall spend their third year in field investigations in the South, each student concluding his course with a thesis based upon his discoveries. This donation should result in disclosing important documentary sources in a neglected field of historical investigation. The University is seeking an endowment to render these fellowships permanent.

Coal Research.—At the international conference on bituminous coal at the Carnegie Institute of Technology, Pittsburgh, in November, there was stressed the urgent need for fundamental research in fields applicable to the coal industry, similar to that made possible for the petroleum industry by donations placed in

the hands of the National Research Council in 1926. The chief chemist of the United States Bureau of Mines described the projects of coal research in progress abroad, and outlined the research in the same field being conducted by that Bureau and by several universities. He advocated a coal research program based upon the raising of an endowment fund of \$4,000,000, yielding an annual income of \$200,000.

Humanistic and Social Sciences.—The elaborate survey of research in humanistic and social sciences undertaken by the American Council of Learned Societies, and carried out under the direction of Professor Frederic A. Ogg, was brought to completion during the year.

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By J. C. WRIGHT

DIRECTOR, FEDERAL BOARD FOR VOCATIONAL EDUCATION

NATURE OF THE PROBLEM

No one knows when the first effort was made to teach a vocation. From the days of the wandering tribes of uncivilized or half-civilized peoples some kind of method has existed whereby there was transmitted from one generation to another the accepted methods of performing human labor. Whether these methods were handed down from father to son or from master to apprentice, there has always existed some form of vocational education, which, however elementary, had for its objective the meeting of the needs of the individual, and the rendering of a service to his fellow man.

With the beginning and development of civilization the father as a teacher gave way to the master of the apprentice; and with the further development of our modern civilization we find the old apprenticeship, the old organized guilds, which, even though they were very effective in meeting the needs of the individual, were entirely inadequate when called upon to meet the needs of society, giving way to a modern apprenticeship.

With the advent of our modern civilization where few families live unto themselves, produce the raw materials for the food they eat, for the clothing they wear, or provide for themselves the comforts and amusements demanded today; with the development of modern manufacturing methods, of intensive farming of the employment of masses of people, neither the parent nor the master workman, as teachers of vocations to the youth, are able to cope with the problem.

THE NATIONAL VOCATIONAL EDUCATION ACT

The development of a vocational program suitable for meeting the needs of the country under the conditions just described may be looked upon as originating in 1914, when President Wilson appointed a commission of three congressmen and five private citizens, chosen because of their interest and experience in this new field of education. The commission met throughout a considerable portion of a year and brought before it all available information bearing upon the problem. Out of

this information certain fundamental goals were set up and national legislation was recommended, in order to provide funds and an organization by which these goals might be attained.

It is not only interesting but also personally helpful for one to reconsider from time to time the objectives which the President's commission believed could and should be met.

OBJECTIVES IN VOCATIONAL EDUCATION

The commission found that according to the Census of 1910 there were 12,659,203 persons in the United States engaged in agriculture, and that so far as it was possible to base judgment on the information available, not more than one per cent of these more than twelve million had had adequate preparation for farming. In a similar manner the commission found that a total of 14,261,376 persons were engaged in manufacturing and mechanical pursuits and in allied industries, and that of this number it was safe to say that not more than one out of every one hundred of these workers at that time had been given an adequate chance to secure training for his vocation.

The committee further concluded, after a careful study of the situation, that an army of at least one million young people would be required each year to replace the annual mortality and superannuation in the nation's great army of workers in these fields. Therefore the problem of vocational education was the problem of equipping for the successful pursuit of some useful trade or occupation, one million new workers each year.

The commission, in further considering the problem of training, estimated that a period of three years on the average would be required in which to prepare the young worker for entrance into his occupation; thus indicating an enrollment goal of 3,000,000, but a goal limited to those who were preparing for employment. It is interesting to note that while the commission throughout its discussions gave considerable thought to the dimensions of the task from the stand-

point of the adolescent youth and his preparation for work, it passed the whole problem of adult education with barely more than a gesture.

GOALS OF THE GOVERNMENT

President Hadley of Yale is accredited with saying that "Education has a constantly receding goal," and as one reviews the developments in the vocational program during the period from 1914 to 1927, the truth of his statement comes out clearly.

In 1914 the President's commission made the following recommendations:

1. That National grants be given to the States for the purpose of stimulating vocational education in agriculture and in the trades and industries.
2. That grants be given in two forms:
 - (a) For the training of teachers of agricultural, trade and industrial, and home economics subjects.
 - (b) For the paying of part of the salaries of teachers, supervisors, and directors of agricultural subjects and of teachers of trade and industrial subjects.
3. That appropriations be made to a Federal board for making studies and investigations which shall be of use in vocational schools.

It will be noted that under these recommendations Federal funds were to be available only for the salaries of teachers of agriculture and trade and industrial subjects; that the problem of home economics was limited to teacher-training and studies and investigations; and that the problem of commercial education was limited to studies and investigations.

Before the vocational bill passed Congress, and became a law on February 23, 1917, these goals had been enlarged so as to include certain funds for the salaries of teachers of home economics. Thus to the million recruits necessary to fill the ranks of workers in agriculture and trade and industrial occupations, fully another million young girls were added, who are annually approaching the duties and responsibilities of a homemaker.

EXPANDING PURPOSES

The goal set up in 1914 has further receded, because of the enlargement of the nation's population in the decade and a half between 1910 and 1927. In 1910 the population

of the United States, together with its outlying possessions, numbered 101,146,530. In 1920 an increase of seventeen per cent is reported. It is fair to assume that in 1927 the increase over 1910 was fully twenty-five per cent. On this basis the one million boys and girls estimated by the commission, plus the one million girls added to the goal by Congress, have increased to a total of two and one-half million in numbers alone.

The problem of meeting the educational needs of the nation, so far as they may be met by vocational education, is not by any means limited to an expansion in volume. Educators are constantly accepting new responsibilities and developing new objectives in new fields and promoting educational services for new groups of people.

The commission of 1914 touched lightly on adult education. After the first year of its organization the Federal Board for Vocational Education, in 1918, emphasized a change in the educational goal as set up by the President's commission, by directing special attention toward the need for giving greater consideration to adult education and to an opportunity for the employed youth to hold his job and attend school on a part-time basis. Today public schools are offering vocational education to adults in all fields, in agriculture, in trades and industries, in home economics, and individual instruction to the disabled civilian. The enrollment reported by the States for the year 1927 shows a total of more than 379,000 employed youth in part-time schools; almost 280,000 adults attending evening schools; and slightly less than 190,000 young people being prepared for entrance into a future occupation by the all-day school. The total enrollment represents about one-fourth of the total of 3,000,000 estimated by the President's commission, as the number that should be in training for entrance into employment. If the evening schools are eliminated from the total reported there is left an enrollment in strictly vocational study of slightly less than 600,000, or one-fifth of the number set up in the above goal. No one knows,

nor is it possible to determine with any degree of accuracy, the number that should be enrolled in the all-day school; but it is safe to say that the schools have not yet reached the goal which might have been safely set in 1914 and which, with an increasing population, had receded a considerable distance in 1927.

SUMMARY OF NINE YEARS' PROGRESS (1918-1927)

While the program in operation in vocational schools and classes during the past nine years has completed the tenth year, no reliable figures are available showing the enrollment in the various types of schools previous to 1917, at which time the National Vocational Education Act became effective. For the purpose of comparison the following table shows the enrollment for the end of the first year, or 1918, as compared with that at the end of the tenth year, 1927, thus making a comparison of nine years of progress. Reference to the table shows an increase in enrollment of almost 600 per cent in the nine years, with an increase of approximately 800 per cent in the amount of funds expended for vocational purposes. The total is \$24,000,000 expended in all types of schools, \$2.53 of State and local money being expended for every dollar of Federal money expended. It is also interesting to know that in this period of nine years the expenditure of funds for agricultural education increased more than tenfold; while in trade and industrial education the enrollment increased about five times, and in home economics education about seven times.

PRESENT STATUS

The amount of Federal funds allotted to the States under the statute increased each year until the year 1926, at which time the appropriation became stationary. It therefore became necessary for the States to adopt a policy with respect to the amount of reimbursement to be given to the various schools, since the sum of money available would not permit of the expected maximum reimbursement of fifty per cent for the sala-

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TABLE SHOWING NINE YEARS' PROGRESS (1918-1927)

Item	1918	1927
<i>Enrollment in Vocational Schools</i>		
Total	164,186	911,626
In Federal-aided schools	164,186	784,986
In State-aided schools organized under the State plan .....	.....	126,640
<i>Total Expenditure</i>		
Total	\$3,039,061.15	\$24,553,331.86
From Federal funds	832,426.82	6,730,306.25
From State funds	1,024,930.48	6,505,817.23
From local funds	1,181,703.85	11,317,209.38
VOCATIONAL AGRICULTURE		
Total enrollment	15,453	129,032
In Federal-aided schools	15,453	124,937
In State-aided schools .....	.....	4,095
Total expenditure	\$739,933.27	\$7,469,295.39
From Federal funds	273,282.08	2,891,591.57
From State funds	220,713.98	1,509,065.78
From local funds	245,937.21	3,158,638.04
VOCATIONAL TRADE AND INDUSTRY		
Total enrollment	117,936	564,188
In Federal-aided schools	117,934	495,629
In State-aided schools .....	.....	68,559
Total expenditure	\$1,536,438.95	\$11,374,678.05
From Federal funds	307,374.57	2,426,576.97
From State funds	497,988.39	3,074,705.24
From local funds	731,075.99	5,873,395.84
VOCATIONAL HOME ECONOMICS		
Total enrollment	30,799	218,406
In Federal-aided schools	30,799	164,420
In State-aided schools .....	.....	53,986
Total expenditure	\$334,548.49	\$3,338,920.78
From Federal funds	57,773.82	486,126.07
From State funds	114,790.69	908,382.62
From local funds	161,983.98	1,944,412.09
VOCATIONAL TEACHER-TRAINING		
Total enrollment in teacher-training institutions	6,589	18,199
Total expenditure	\$428,140.44	\$2,370,437.64
From Federal funds	193,996.35	1,016,010.64
From State funds	191,437.42	1,013,663.59
From local funds	42,706.67	340,763.41

ries of teachers. In some instances State boards for vocational education have adopted the policy of pro-rating the amount of money available to the various schools. In others it has been the policy to withdraw aid from schools that are well established and under way, and to give aid to new developments. For this reason the States report to the Federal Board for Vocational Education a total of 126,640 pupils enrolled for whom no Federal funds were used as reimbursement for the salaries of teachers; these schools and classes were

organized under the State plan for vocational education and under the supervision of the State board.

Many people are convinced, in their own thinking, that all education should be made available to every one of the more than 40,000,000 men and women and boys and girls between the ages of eighteen and forty, who are at work, enabling them to hold their job and also to attend a vocational school, either during a part of their working time or during a part of their leisure time.

No one can possibly estimate with

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any degree of accuracy how many of these millions will be willing to give up their leisure time and attend school, or to what degree employers will be willing to divide the working day or week as between school and work. It is safe to say that the number that could safely be estimated as the probable enrollment eight or ten years hence will be considerably in excess of that of the present day.

PART-TIME COMPULSORY ATTENDANCE

In 1914 the Commission visualized the need for part-time education for the employed youth; and in 1927 half the States have enacted compulsory part-time school attendance laws, requiring a minimum of attendance on the part of this group. The Federal Commission, however, did not visualize in its goal the variety and magnitude of the problems arising out of this new type of organization for combining school and work.

By 1914 the old apprenticeship system between master and apprentice had broken down, and was fast disappearing in all but a very few skilled occupations. This situation was known to the Commission when it commented upon the absence of any system of education which would follow the youthful worker to his tasks, and by continued training show him a way to efficiency and happiness. Nevertheless the Commission was unable to visualize any organized device or procedure which could be included in the vocational program as a substitute for the master and his apprentice.

Today, under a modernized procedure, which is fitted to the complications of the present-day social organization, a new apprenticeship has been developed. The master workman is still on the job but not with the responsibility of a teacher. Groups of apprentices are brought into the public schools on a part-time basis, and under the instruction of an occupationally competent master workman are given in four to eight hours per week an opportunity to learn the content of their trade.

Both in agriculture and in home economics a somewhat similar reced-

ing goal exists in the case of the boy and girl who leaves school at an early age. Several thousand of these were enrolled in part-time classes in agriculture in 1927, and more than 20,000 in home economics.

NEW CONDITIONS

In 1914 the Commission visualized a need for a representative board to administer the National Vocational Education Act. It believed that this board should make studies and investigations in the field of agriculture, industry, commerce, and home-making. It did not and could not visualize the demands of today, not only for research, but for assistance in developing programs for groups of workers in various fields and occupations. It could not foresee that the National Association of Retail Grocers or the Laundry-owners' National Association would demand of this organization assistance in determining a program of vocational education for all those employed in the several hundred thousand grocery stores and in the many thousand laundries in the country. It did not and could not visualize the rapidly developing demand for improvement of foremanship, which has swept the country from Maine to California and from Washington to Florida, in practically every type of manufacturing and industrial pursuit. This program requires the services of a new type of teacher, one commonly called "a conference leader," a type of which none were available in the beginning, and nothing was known as to how they might be trained.

TEACHER-TRAINING

In 1914 the commission and the public generally conceived of teacher-training as the job of an institution, as one that could be accomplished entirely within the walls of a college or university, and one that could be completed in advance of employment. Today there is a changed conception and a receding goal. Administrators are more and more recognizing the necessity of securing a teacher who shall be (1) occupationally competent; (2) equipped with the technique of teaching; (3) possessed of

the amount of general education and personal characteristics desirable and necessary for the particular teaching position. This change in conception has brought about the employment of occupationally competent workers, many of whom must receive their training as teachers after employment on the job. The problem as conceived today is not only one of preparation for teaching but one of improvement in service—an ever-receding goal.

In 1914 the commission visualized the need for supervision in the field of agricultural education only. The Federal Board, after one year of operation, made possible the use of Federal teacher-training funds for State supervision in the three fields of agriculture, trades and industries, and home economics. This action on the part of the Federal Board has had more to do with the present-day accomplishments and improvement of the program than any other single act on its part. Today every State has one or more supervisors in each of the three fields on a full-time or a part-time basis, giving his or her time to the improvement of the State's program.

The Original President's Commission gave little or no thought to the qualifications of teacher-trainers, even though it provided a special fund for the training of teachers. With the development of the program throughout the ensuing years, educators have come to realize that the training of teachers in vocational education likewise requires the services of a specialist. In order to make this part of the program efficient, careful attention must be given to the particular qualifications to be possessed by those responsible for this portion of the program. In a recent ruling adopted by the Federal Board provision is made for securing certain minimum qualifications in order to meet this new goal in vocational education.

REHABILITATION OF EX-SOLDIERS

In 1914 the Commission failed entirely to see anywhere in the picture that vast army of 600,000 or 700,000 disabled men who through accident or disease had suffered a vocational

handicap of some sort. This objective or goal was not visualized until 1918, when, as a result of the World War, attention was directed toward this need, by the program for rehabilitating the disabled soldier, sailor, and marine. It was not until 1920 that Congress included it in the nation's program of vocational education; and today 40 States are engaged in rendering this service to their citizens. It is estimated that approximately 112,000 men, women, and children who are vocationally handicapped, are added each year to the nation's army of disabled. The vocational rehabilitation of 112,000 annually might then be set up as a goal in this particular service. In seven years the cooperating States have actually rehabilitated only about 30,000.

LOCAL SUPERVISION

In 1914 the commission failed to recognize the importance of supervision in the local community, and it has required a period of ten or more years to direct attention toward the necessity of improving every program to its highest degree of efficiency.

Believing that the use of teacher-training funds for State supervision, which were made available in 1918 by a ruling of the Federal Board, had resulted in greatly increased efficiency, the Federal Board later ruled that teacher-training funds under certain conditions may also be used for local supervision, where the plan provided for certain minimum qualifications, and for a program that would be directed toward the improvement of teachers in service. Here, again, is a new goal that has but recently come into the picture and which may be expected to constantly enlarge as it recedes in the future.

EXECUTIVE ORGANIZATION AND STAFF

In 1914 the commission had but little to say about the vast organization which would finally be developed for meeting the objectives and goals set up. Provision was made by Congress for a Federal Board for Vocational Education on a representative basis and, likewise, provision was

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made for cooperation with State boards for vocational education which were to act in common with the local public schools; but the staff of officers and subordinates which would be called upon to perform the functions of these new organizations were not defined. The best estimates that could be made as to the number receiving vocational training before the National program became operative was 25,000. In 1927 this number had increased to more than 911,000, an increase thirty-six times over; and the staff of teachers, supervisors, teacher-trainers, directors, and specialists had developed to the following remarkable extent:

Teachers of vocational subjects	18,900
State supervisors of vocational education	191
Engaged in the training of teachers...	246
Supervising the rehabilitation of the disabled civilian	158
State directors	39
Executive officers	49
Specialists on the staff of the Federal Board coöperating with the States in promoting this program	25

This army of almost 20,000 officers and nearly 1,000,000 privates represents the supporting service to industrial prosperity. Without this service the economic position of our country would soon change from one of world leadership to second, third, or even to a lower place in the rank of nations.

EFFICIENCY

Development of Standards.—One of the characteristics of the public school program which tends to promote inefficiency is the lack of competition. It has oftentimes been said that "competition is the life of trade." Since it is impossible to have this kind of competition in public schools, the same necessity for giving attention to efficiency in operation does not exist as in a private business. In the past, educators have given much time and thought to the development of civic ideals and to the attainment of desirable goals in educational programs; but they have given very little thought to the necessary expenditure of the time, effort, and money involved in attaining their objectives.

Subjects.—With the initial development of vocational education, some ten or fifteen years ago, much more attention began to be directed toward the selection of functioning subject matter, toward the education for adults, toward schools for employed youth, and toward the organization of types of schools which would conserve as far as possible the time of the pupil. It is only natural, therefore, that the question of efficiency is beginning to be approached by a few leaders, from the standpoint of an efficiency engineer.

Accessory Influences.—A study of the problem of developing standards of efficiency seems to indicate that wherever the objective to be obtained is of a tangible character, satisfactory characteristics of an efficient program can be set up; but where the objective is of an intangible character, the efficiency approach becomes much more difficult. The following situations represent some of the phases of a vocational school program which have been made a matter of study from the standpoint of developing standards of efficiency:

1. Subject matter and its interrelations.
2. Qualifications of teachers.
3. Buildings and equipment.
4. Types of school organization.
5. Types of administrative organization.
6. Courses of study.

Right Standards Promote Intelligent Control.—A serious present-day need is for standards of a reliable character that will enable the administrator to promote more intelligently the best types of schools; and will also direct that school along the line of its greatest efficiency to the community. Some of the objectives which an administrator can attain through the use of the right kind of standards are as follows:

1. A better system of supervision.
2. More efficient instruction.
3. More economical use of the time of the pupil and teacher.
4. A higher degree of coördination between teachers and departments.
5. More reliable conditions for admission, promotion, and graduation.
6. A better classification of students.

EQUIPMENT

Efficient Equipment.—When applying the principles of efficiency to the

selection and operation of an equipment in a vocational school shop, it is found that the tool which costs the least is not always the most economical tool to buy. In a similar manner it is sometimes found that the most expensive tool is not any more efficient on a job for teaching purposes than is one that is less expensive. The problem, therefore, is to select tools of such a grade and quality, and in such quantity, as will enable the instructor to secure the greatest efficiency for the time, effort, and money expended.

Characteristics of an efficient equipment.—The following may be used by a supervisor or administrator for this purpose:

1. The quality of the equipment corresponds to the standards set up by the occupation itself.
2. The quantity of the various machines and tools is limited to that necessary for efficient instruction.
3. The equipment must function in the occupation for which the student is being trained.
4. The working condition of equipment and tools must be such as will not retard the learner's progress.
5. The arrangement of equipment must correspond to the best practice in the occupation.
6. The responsibility for the care of tools and equipment should be placed upon the learner as rapidly as his progress will permit.
7. Safety precautions and devices should be provided so as to protect both life and property.

When considering any particular equipment, or piece of equipment, the foregoing characteristics can be evaluated in terms of a ten-point scale, and thus secure either a graphical or percentage rating as the final score. Similar characteristics can likewise be set up for other situations which need to be evaluated.

BY-PRODUCTS OF FOREMAN-TRAINING PROGRAMS

During the past eight or nine years a number of agencies have been interested in the development of foreman-training programs. The announced objectives of these programs was to improve foremanship, having in mind the foreman as a boss rather than as a worker. Some of the by-products should be noted which are realized as a result of the attain-

ment of this objective. It has been found by experience that a foreman who has gone through this program desires to establish organized evening schools for his men in order that they may develop a better degree of technical ability. In some cases he may round out the workmen's experiences in operating special tools and equipment. In a similar manner he is receptive toward a program of apprentice education, and towards such time arrangement as will enable the young worker to attend school during a part of his working day.

As a concrete example of these by-products, a foreman-training program begun in 1921, in southwest Virginia, among the coal miners, has resulted in the training of some six or seven hundred foremen in one community. At the present time some 1,700 miners are enrolled in evening classes, where they study such related subjects as mine timbering, coal mine gases, ventilation, safety lamps, shot firing, track laying, and mine haulage. The men are encouraged by the foremen to enroll in these classes, and they are given every assistance in making headway under the direction of foreman instructors employed by the public schools.

Additional by-products are noticeable in the increased interest in the development of leadership within the industrial organizations, and a greater appreciation of the foreman's responsibilities on the part of the management.

DEVELOPMENTS IN COMMERCIAL EDUCATION

Programs.—A very significant addition to the vocational education movement in this country has resulted from cooperation during the past three years between a number of National trade associations and the Federal Board for Vocational Education. The National Association of Retail Grocers, the Laundryowners' National Association, and the National Association of Retail Meat Dealers are now actively promoting organized educational programs for men in the occupations represented by these associations. The American Booksellers' Association is planning to

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launch a program in the fall of 1928 for training retail book salesmen. The grocers and laundry owners have directors in charge of the promotional work and the preparation of the instructional material needed in their programs. The retail meat dealers are being aided by the Institute of the American Meat Packers in organizing conferences which constitute the beginnings of their program.

The response to these programs has been very gratifying to those in charge. In the first year of active work the National Association of Retail Grocers reached almost 750 grocers through 38 conferences held in 23 States; and reached still other grocers through a correspondence plan of instruction. Within the first six months, the Laundryowners' program for training laundry salesmen was being followed in over 400 laundries so that between four and five thousand laundry salesmen were being trained. Conference groups for retail meat dealers were organized within four months of the announcement in at least ten of the large cities in this country.

State Action.—While these particular programs are being promoted and supported solely by the organizations which sponsored them, yet on every hand evidences appear that State vocational education authorities are seeing in these programs another opportunity to widen the scope of the State program. In Alabama, a conference for training grocers to serve as conference leaders was held during the first year of the grocer's educational program. A State conference of men interested in becoming leaders of conferences for retail meat dealers was held in Ohio, as a preliminary to the formation of a State association of retail meat dealers, which is to aggressively promote the formation of conference groups throughout the State of Ohio. Supervisors of trade and industrial education, and State agents qualified to conduct conference-leader training programs are becoming interested in organizing local conferences to train conference leaders for the groups being formed. This interest shows that conferences for these groups of work-

ers will soon become a permanent part of the State's vocational education program.

The great number of men engaged in small business units, either as proprietors or as salesmen, who need organized instruction in the technique of better store management and salesmanship, offers a potential market for an enormous expansion for the organized program of vocational education.

VOCATIONAL REHABILITATION

Measuring Results.—The national program of vocational rehabilitation of the disabled civilian has been in operation since 1920. The rehabilitation staff of the Federal Board for Vocational Education, which is the Government agency promoting this work, decided early in the year 1927 to enlist the cooperation of the 41 States which had passed rehabilitation legislation, in an investigation of actual accomplishments of the program. Although the difficulty of such an objective was recognized, it was believed that the plan was the only really effective method not only of measuring accomplishments, but also of evaluating the various procedures by which vocational rehabilitation is carried on.

Investigation.—Hence it was decided to make an investigation of all persons who had been rehabilitated during the fiscal period 1920-1924. When this decision was made, the staff took into consideration the significant fact that in the early years of this period the work was new, and the workers for the most part untrained and inexperienced in rehabilitation work. Naturally, under such circumstances, it was to be expected that the service rendered by State rehabilitation departments in these early years would show a much lower standard than that of later years. On the other hand, stood out the manifold advantage of making the study cover a period beginning with the inception of the program, so that with subsequent studies a continuous record of accomplishments would be available.

Phases.—In the next place it was decided to study all of the cases re-

habilitated in the period, so that no criticism could later be made that the cases selected for investigation were not representative. Again, it was determined to make the investigation cover both the office records of service rendered and the post-rehabilitation employment history of each rehabilitated case. To date (November, 1927) the first phase of the study has been accomplished. All the field work has been accomplished, 33 States have cooperated, and 7,850 cases have been investigated. At present the staff is engaged in editing and coding the case schedules; and in the near future the statistical machines will be put into operation, statistical tables will be compiled, and the descriptive manuscript be prepared for publication.

The plan of the study is described as follows: Printed schedules were placed in the hands of State workers who made the field investigations. On the first page of the schedule (a separate schedule for each case) were recorded in the rehabilitation office, taken from the office records, such data regarding the disabled person as name, address, sex, age, number of dependents, education, origin of disability, description of disability, vocational history prior to injury and prior to rehabilitation; service rendered by the State, the rehabilitation job, and the date of closure. This completed the office record investigation. Next, the schedule was taken into the field; the disabled person located, if possible, and an inquiry made of him for facts regarding his post-rehabilitation history.

Record of Jobs.—The schedule provides opportunity for recording the various jobs held by the disabled person subsequent to his rehabilitation. Under each job is recorded the following data:

- Date entered employment.
- Agency making placement.
- Relation of the job to the prior job.
- Beginning wage.
- Final wage.
- Continuity of employment.
- Reason for leaving job.

On the back of the schedule is provided a place for reporting remarks

by the investigator or by the person rehabilitated. Clearly this schedule provides a rich fund of data regarding the service rendered to the individual in his post-rehabilitation history.

RESULTS OF INVESTIGATION

Even to suggest the innumerable lines of possible investigation through analysis of the data that have been secured is not possible. Suffice it to say that the plan is to show: first, the correlation between the service rendered and the nature of the rehabilitant's experience subsequent to receiving that service. Here the principal objective in the study will be to determine the permanency of rehabilitation and the degree to which it has affected the economic condition of the person served. A second objective, probably as important, is the determination of the relative values of the various methods by which rehabilitation is accomplished. For instance, this research will show the permanency of rehabilitation for the group rehabilitated through trainings as contrasted with the group rehabilitated through placement without training. Of course we must include all of the correlations that arise out of age, education, experience, degree of disability, and other factors that affect the service of re-establishing the individual in remunerative employment. In the third place, it will be possible to isolate certain groups,—for instance, such as the one-armed and the blind,—for the purpose of determining the kinds of vocations into which they have been rehabilitated, and the limitations that grow out of their disability.

When published, the results of this study will aim to show the character and permanency of the rehabilitation program, the kind of groups that can be served best, and the kind of service most fitting for each group. The results will be used to demonstrate to State directors and workers in the field of rehabilitation certain policies and standards which they should observe, if they are to develop effective programs of rehabilitation.

RELATION OF VOCATIONAL EDUCATION TO ORGANIZED LABOR

BY JOHN C. WRIGHT

DIRECTOR, FEDERAL BOARD FOR VOCATIONAL EDUCATION

Labor and Education.—In the office of the American Federation of Labor, Washington, hangs an enlarged copy of the following quotation from the pen of Dr. L. P. Jacks, England's philosopher and friend of labor:

"It is only as a labourer that man is either capable of education or worthy of it. The men of science, the artists, the poets, the philosophers, the heroes, the saints, the captains of industry, and the captains of salvation—what are they, in the last analysis, but highly educated labourers, found most frequently in communities where culture and labour are working in alliance, least frequently where they have drifted apart, as, alas! they are drifting in these days? The great task of our times, once more, is to reunite these separated elements."

A somewhat similar viewpoint of the relation of education to labor was expressed by Abraham Lincoln in 1859, when he delivered an address before a group of farmers at the State Fair in Milwaukee. He said:

"Educated people must labor. Otherwise education itself would become a positive and intolerable evil. No country can sustain in idleness more than a small percentage of its numbers. The great majority must labor at something productive. From these premises the problem springs: How can labor and education be the most satisfactorily combined?"

Running through these two statements are two common trends, or ideas. The first is that in a democracy educated people must labor. The second is that the best way in which to get an education is to combine education and work; or, as stated by Lincoln, to combine education and labor. This theory is in accord with the thinking of progressive educators. It has brought about a very decided movement toward getting away from abstract text material, which in no way deals with practical situations; and toward bringing into the school-room the experiences of successful workers, whether these workers be

in mechanical fields, in agriculture, in office, or store work, or in the more highly paid positions as captains of industry. Abraham Lincoln said in no uncertain terms that educated people must labor, while Dr. Jacks expressed with emphasis the idea that it is only as a laborer that man is even capable of an education or worthy of it.

Uncertainty of Skilled Laborers.—When the question of the relation of vocational education to organized labor is approached from the angle of supply and demand, the answer may be supplied from either of two angles. If the question of an adequate supply of well-skilled technically-trained labor sufficient to meet the needs of industry and of society at any given time is considered, the investigator has before him a continually changing scene. The supply of men in the building trades changes with the seasons. It is well known that in the temperate zone building operations are much more active during the spring, summer, and fall months than during the winter months; that workers in steel industries are affected by industrial depressions and periods of commercial prosperity; that workers in the textile mills in New England are affected by the development of textile manufacturing mills in the South; and that workers in many industries are oftentimes affected by strikes in the coal fields and lockouts in mining areas and on lines of transportation.

In fact, the whole industrial organization seems so delicately balanced and so sensitive to climatic changes, to industrial depression, to labor troubles, to crop failures, and to many other factors affecting the balance between supply and demand, that it seems impossible to base any estimate of the need for competent workmen upon industrial conditions, except where the data secured cover

a sufficiently long period of time to warrant a statement of average conditions.

On the one hand, organized labor seeks to prevent an over supply of workers in any one field. This attitude is taken on the theory that an over supply would result in part-time or unemployment, and ultimately in a reduction of wages. On the other hand, it has always stood for a training program which would enable those already at work to improve their skill and increase their fund of technical information related to the job.

Fields of Skilled Labor.—Information secured from the United States Census of 1920 shows approximately 40,000,000 employed men and women distributed as follows:

1. Public Service	770,460	1.9%
2. Extraction of Minerals	1,090,223	2.6%
3. Professional Service..	2,143,889	5.2%
4. Transportation	3,063,582	7.4%
5. Clerical Occupations .	3,126,541	7.5%
6. Domestic and Personal Services	3,404,892	8.2%
7. Trade (Commerce) ..	4,242,979	10.2%
8. Agriculture	10,953,158	26.3%
9. Manufacturing	12,818,524	30.8%
	41,614,248	100.0%

It is evident that as time goes on changes will take place in the relative number of persons employed in these nine major fields of activity. For example, for many years the percentage of persons engaged in farming occupations has constantly decreased, while the number of persons living in urban communities has constantly increased. This situation is perfectly natural and simply means that the people are responding to normal changes in social conditions.

AGES IN THE BUILDING TRADES

In order to ascertain the degree to which the building trades were attracting young men into employment, a study based upon the Census of 1910 and 1920 was made of nine different highly skilled occupations in that field. This study was intended to show the percentage of mechanics above 45 years of age to the total number in each occupation. The result of this study is given in the following tabulation:

Occupation	1910	1920
Carpenters	38.9	44.9
Brick and Stone Masons (including cement finishers)	34.6	44.6
Paper Hangers	24.6	41.4
Painters and Glaziers	28.8	40.9
Plasterers	32.3	41.7
Roofers and Slaters	23.6	32.1
Plumbers	12.5	21.7
Structural Iron Workers	14.4	21.2
Electricians	7.3	11.2

Not only employers but organized labor should be greatly concerned with the facts to be deduced from the figures in the last two columns. At the same rate of progress these highly skilled building trade occupations will soon become "Old Men's" occupations. It is evident that apprentices are needed to keep these trades alive and prevent internal decay due to the slow but sure work of "Father Time."

Apprentice Education.—It needs no argument to support the premise that all occupations must have a sufficient influx of young workers or apprentices if the occupation is to endure. The situation shown by the foregoing Census figures can only be remedied by providing in some manner for more apprentices. Within the past five years a number of cities have organized apprentice education programs. For the most part, these programs represent the combined effort of organized labor, employers, and the public schools.

In this tri-party arrangement, the employer agrees to employ the apprentice, and to give him an opportunity to secure the necessary variety of work experiences. Labor agrees to help select the apprentice, to cooperate in securing regular attendance, and to assist in securing occupationally qualified teachers. The public schools agree to employ a qualified teacher, that is, one who knows his subject matter and who is then trained in methods of teaching.

The particular organization set up under this plan is a joint committee made up of members from each group and for each trade. Under this arrangement the apprentice gets most of his work experiences on the job,

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and comes to school for four hours per week to receive his technical training.

Vocational Education for Adults.—Under a "pick-up method" there are bound to be many who become known as journeyman workers, but who are masters of the craft in part only. In some instances it is a shortage of all-around experience, in others a lack of technical knowledge, and in many cases both situations exist. To meet this need, instruction in evening and part-time classes should be made available to the individual, at the time he needs it, wants it, and is able to take advantage of the opportunity.

Organized Labor Favoring Vocational Education.—Among the many organizations which have favored a national program of vocational education, since the movement began

about fifteen years ago, the American Federation of Labor, together with various affiliated organizations which go to make up that great Federation, were the first to take a positive stand for a national program, which would provide an opportunity for both youth and adults to prepare themselves for doing the work that society wants done. With the passage of the Smith-Hughes Act in 1917 the American Federation of Labor did not cease to record its views and interest in the program. Each year at the annual meeting of the American Federation of Labor, a resolution expressing its attitude toward the public schools and toward vocational education in particular is written into the minutes. The most recent of these annual meetings was held during the month of September, 1927, in Los Angeles, Cal.

COGNATE SOCIETIES

AMERICAN ASSOCIATION FOR ADULT EDUCATION.

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

AMERICAN CIVIC ASSOCIATION.

AMERICAN COUNCIL OF LEARNED SOCIETIES.

AMERICAN COUNCIL ON EDUCATION.—26 Jackson Place, Washington, D. C.

AMERICAN EDUCATION ASSOCIATION.—522 Fifth Ave.

AMERICAN FEDERATION OF TEACHERS.

AMERICAN UNIVERSITY UNION.—Columbia University, New York, N. Y.

EDUCATIONAL PRESS ASSOCIATION OF AMERICA.

GENERAL EDUCATION BOARD.—61 Broadway, New York, N. Y.

NATIONAL ACADEMY OF VISUAL INSTRUCTION.

NATIONAL ASSOCIATION OF DIRECTORS OF EDUCATIONAL RESEARCH.—University of Michigan, Ann Arbor, Mich.

NATIONAL CONGRESS OF MOTHERS AND PARENT-TEACHER ASSOCIATIONS.—1201 16th St., N. W., Washington, D. C.

NATIONAL EDUCATION ASSOCIATION OF

THE UNITED STATES.—1201 16th St., N. W., Washington, D. C.

NATIONAL COUNCIL OF EDUCATION.—200 New Jersey Ave., N. W., Washington, D. C.

NATIONAL HOME AND SCHOOL ASSOCIATION, INC.—17 E. 42nd St., New York, N. Y.

NATIONAL RESEARCH ASSOCIATION.

NATIONAL RESEARCH COUNCIL.—Division of Education Relations.

NATIONAL SOCIETY FOR THE STUDY OF EDUCATION.—10 Putnam St., Danvers, Mass.

NATIONAL EDUCATION ASSOCIATION.—Department of Superintendence.

PUBLIC EDUCATION ASSOCIATION.—8 W. 40th St., New York, N. Y.

WORLD FEDERATION OF EDUCATION ASSOCIATIONS.

INTERNATIONAL

ALUMNI ASSOCIATION OF AMERICAN RHODES SCHOLARS.—305 Congress St., Boston, Mass.

INSTITUTE OF INTERNATIONAL EDUCATION.—2 West 45th St., New York, N. Y.

INTERNATIONAL COUNCIL FOR THE EDUCATION OF EXCEPTIONAL CHILDREN.

XXVII. EDUCATION

INTERNATIONAL COUNCIL OF RELIGIOUS EDUCATION.

INTERNATIONAL EDUCATIONAL ASSOCIATION.—80 E. 11th St., New York, N. Y.

INTERNATIONAL INSTITUTE OF INTELLECTUAL COOPERATION.

INTERNATIONAL KINDERGARTEN UNION.—1201 16th St., N. W., Washington, D. C.

INTERNATIONAL LYCEUM AND CHAUTAUQUA ASSOCIATION.—431 S. Wabash Ave., Chicago, Ill.

INTERNATIONAL MORAL EDUCATION CONGRESS.

INTERNATIONAL SOCIETY FOR CRIPPLED CHILDREN.

INTERNATIONAL STUDENT FEDERATION.
LEAGUE OF NATIONS COMMITTEE ON INTELLECTUAL COOPERATION.—Geneva, Switzerland.

PAN AMERICAN EDUCATIONAL CONGRESS.—Universidad de Chile, Santiago, Chile.

WORLD ASSOCIATION FOR ADULT EDUCATION.

TEACHERS

AMERICAN FEDERATION OF TEACHERS.—327 So. La Salle St., Chicago, Ill.

EDUCATORS' ASSOCIATION.—303 Fifth Ave., New York, N. Y.

HEAD MASTERS' ASSOCIATION.—241 West 77th St., New York, N. Y.

NATIONAL ASSOCIATION OF TEACHERS' AGENCIES.—36 Pearl St., Hartford, Conn.

NATIONAL STUDENT FORUM.—2929 Broadway, New York, N. Y.

STUDENTS' CO-OPERATIVE SOCIETY.—565 Fifth Ave., New York, N. Y.

TEACHERS' COUNCIL.—500 Park Ave., New York, N. Y.

TEACHERS' UNION.—70 Fifth Ave., New York, N. Y.

SCHOOLS

AMERICAN SCHOOL CITIZENSHIP LEAGUE.

FEDERATION FOR CHILD STUDY.—242 W. 76th St., New York, N. Y.

NATIONAL ASSOCIATION OF HIGH SCHOOL SUPERVISORS AND INSPECTORS.—1016 Michigan Ave., Ann Arbor, Mich.

NATIONAL ASSOCIATION OF SECONDARY SCHOOL PRINCIPALS.

NATIONAL KINDERGARTEN ASSOCIA-

TION.—8 W. 40th St., New York, N. Y.

Y. M. C. A. EDUCATIONAL SECRETARIES ASSOCIATION.—55 Hanson Place, Brooklyn, N. Y.

COLLEGES AND UNIVERSITIES

AMERICAN ASSOCIATION OF COLLEGIATE REGISTRARS.

AMERICAN ASSOCIATION OF JUNIOR COLLEGES.

AMERICAN ASSOCIATION OF UNIVERSITY PROFESSORS.—Charles River Road, Cambridge, Mass.

AMERICAN SOCIETY FOR THE EXTENSION OF UNIVERSITY TEACHING.—925 Chestnut St., Philadelphia, Pa.

AMERICAN UNIVERSITY UNION.—2 W. 45th St., New York, N. Y.

ASSOCIATION OF AMERICAN COLLEGES.—111 Fifth Ave., New York, N. Y.

NATIONAL UNIVERSITY EXTENSION ASSOCIATION.—Department of Education, State House, Boston, Mass.

ASSOCIATION OF AMERICAN UNIVERSITIES.—Harvard University, Cambridge, Mass.

ASSOCIATION OF COLLEGES FOR NEGRO YOUTH.—Shaw University, Charlotte, N. C.

ASSOCIATION OF LAND GRANT COLLEGES.—Iowa State College, Ames, Iowa.

ASSOCIATION OF URBAN UNIVERSITIES.—College of the City of New York, New York, N. Y.

COLLEGE ENTRANCE EXAMINATION BOARD.—431 W. 117th St., New York, N. Y.

NATIONAL ASSOCIATION OF COLLEGES AND UNIVERSITIES.—Atlanta, Ga.

NATIONAL ASSOCIATION OF STATE UNIVERSITIES IN THE U. S.—University of Illinois, Urbana, Ill.

NATIONAL UNIVERSITY EXTENSION ASSOCIATION.—267 State House, Boston, Mass.

NEW ENGLAND ASSOCIATION OF COLLEGES AND SECONDARY SCHOOLS.—Wellesley College, Wellesley, Mass.

PHI BETA KAPPA.—145 W. 55th St., New York, N. Y.

PROFESSIONAL EDUCATION

AMERICAN ASSOCIATION FOR THE STUDY OF THE FEEBLE-MINDED.

AMERICAN ASSOCIATIONS OF TEACHERS COLLEGES.

COGNATE SOCIETIES

AMERICAN BAR ASSOCIATION.—Section of Legal Education.
 ASSOCIATION OF AMERICAN LAW SCHOOLS.—102 Law Building, Iowa City, Iowa.
 ASSOCIATION OF AMERICAN LIBRARY SCHOOLS.
 ASSOCIATION OF AMERICAN MEDICAL COLLEGES.
 ASSOCIATION OF AMERICAN SCHOOLS AND DEPARTMENTS OF JOURNALISM.
 AMERICAN MEDICAL ASSOCIATION.—Council on Medical Education and Hospitals.
 ASSOCIATION OF AMERICAN LAW SCHOOLS.
 NATIONAL SOCIETY OF COLLEGE TEACHERS OF EDUCATION.

SPECIAL EDUCATION

AMERICAN ASSOCIATION OF WORKERS FOR THE BLIND.
 AMERICAN ASSOCIATION TO PROMOTE TEACHING OF SPEECH TO THE DEAF.—1601 35th St., N. W., Washington, D. C.
 AMERICAN CHILD HEALTH ASSOCIATION.
 AMERICAN HUMANE EDUCATION SOCIETY.—180 Longwood Ave., Boston, Mass.
 AMERICAN PHYSICAL EDUCATIONAL ASSOCIATION.

IMMIGRATION EDUCATION COUNCIL.
 NATIONAL ASSOCIATION OF THE DEAF.—School for the Deaf, Trenton, N. J.

VOCATIONAL

AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF AGRICULTURAL TEACHING.
 AMERICAN HOME ECONOMICS ASSOCIATION.—617 Mills Bldg., Washington, D. C.
 AMERICAN PHYSICAL EDUCATION ASSOCIATION.—820 State St., Springfield, Mass.
 BUREAU OF AMERICAN WORKERS' EDUCATION.—416 W. 24th St., New York, N. Y.
 NATIONAL SOCIETY OF VOCATIONAL EDUCATION.—Department of Public Instruction, Harrisburg, Pa.
 NATIONAL VOCATION GUIDANCE ASSOCIATION.—Harvard University, Cambridge, Mass.
 NEW ENGLAND HOME ECONOMICS ASSOCIATION.—41 Eliot Memorial Road, Newtonville, Mass.
 TRADE UNION EDUCATION LEAGUE.—108 East 14th Street, New York, N. Y.
 VOCATIONAL EDUCATION ASSOCIATION OF THE MIDDLE WEST.—John N. Greer, Minneapolis, Minn.

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